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ENERGY

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24 March 1983

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OIL AND GAS

DELAYS IN INTRODUCTION OF NEW OIL EQUIPMENT

Moscow SOVETSKAYA ROSSIYA in Russian 7, 8 Dec 82

[Article by M. Zaripov and A. Podol'skiy: "What Hinders the Introduction of New Technology in the Oil Fields"]

[7 Dec 82 p 2 Part I]

[Text] Oil and man. There was a time when people were content to draw the earth's "black blood" from springs and wells with a simple bucket. But today, hundreds of thousands and millions of oil wells using powerful equipment cannot fully satisfy the demand for this wonderful gift of nature. Prospectors penetrate the most remote regions, which at times "can only be reached by air." Neither the depths of the sea, nor rocky mountain peaks above the clouds stop them. Anything to get to the "black gold." However, uncovering the deposit and equipping it is only half the job. It is necessary to be able to take the riches of the underground storehouse. As far as oil is concerned, half or more of the reserves remain after exploitation of the oil field is completed. These reserves are called "nonremovable."

Of course, one may be comforted by the thought that the oil which remains in the reservoir is not ultimately lost. As is true of wasteheaps of diamond bearing rock, it awaits new technological approaches. But there is also an important difference. Whereas waste heaps containing valuable diamonds may remain untapped for decades, oil fields with wells and other complex underground and surface equipment are shortlived. Metal ages and rusts. So it could happen that when the long awaited [technological] "hour" arrives, it will be necessary to "uncover" the Samotlor oil fields anew, and once again drill millions of costly meters of mountain rock.

The urgency of the problem of completely exploiting the "black gold" reserves also stems from another equally important circumstance. There remain on earth, and within its presently accessible depths, fewer and fewer unspoiled areas. Scientists long ago warned that if mankind does not learn to better use natural reserves of liquid raw materials and fuels, it might very well face insurmountable obstacles. Even now in a number of the world's oil producing states and in many of our country's oil fields, the need to increase the recovery of this most valuable gift of nature from its beds has become acute. This also applies to the Gronzy Oil Fields.

The peak of oil extraction in the North Caucasus came in the late 1960's and early 1970's, when prospectors succeeded in reaching the Mesozoic depths. They would drill a well to a depth of 5,000 meters and get a gusher. Nearby they would do the same, and again only have to connect the pipe. The oil rushes into it on its own. As a result, in less than two five-year plans output of this most valuable product had increased seven-fold. In 1971, the Grozny workers achieved the maximum output. They gave the country 22,640,000 tons of fuel oil. And this was at the time of the upsurge about Goyt Kort, which had already been discovered in the 1950's, and where only 10 percent of the reserves had been extracted. It is not that it slipped their mind, but they ceased working it in earnest.

But then the situation changed radically.. They ran out of new areas. They went back to Goyt Kort.

Perhaps it is not necessary to detail all the efforts to find the key to the hard-to-reach riches of this underground storehouse. We will note only that the methods then known for attacking the productive strata were not effective. Hope was placed on the experiments of a group of scientists from the North Caucasian Petroleum Scientific Research and Planning Institute headed by Nikolay Mikhaylovich Degtyarev.

The scientists took rock saturated with oil, but difficult to recover by known methods, and squeezed it in a gas press with a force of 300 atmospheres. They could not even believe the result! It could not be! They repeated the laboratory experiment and checked it tens, hundreds, thousands of times. No! Everything was correct. The oil displacement coefficient remained the same: 90 percent! Then they pumped natural gas in the same way into a small, exhausted formation. Again success! The bed of oil, which had been considered barren, revived. They planned to conduct a large-scale industrial experiment on the capricious Goyt Kort. Where to obtain so much gas? From the nearby Benoy condensed gas deposits.

In general, real prerequisites for accomplishing the serious plans did exist. But it was not appropriate to oversimplify the task. It was necessary to put Benoy, which was at an altitude of 2,200 meters, into operation; to build a powerful compression station; and to restore the oil and gas installation on Goyt Kort itself. That is, it was necessary to erect an entire system of unique structures, for which there was no design and construction experience, either domestic or foreign. This required, first of all, the combined efforts of science and industry, and representatives from many different departments. The CPSU Chechen-Ingush Obkom headed this difficult, many-sided work. Local party committees tried to involve the best scientists and engineers in searching for technological solutions, and entrusted the most experienced production brigades with accomplishing them; brigades such as that of Stebletsov.

The experiment took place less quickly than had been hoped. Much time was wasted, recalls project director N M Degtyarev. But they were faced with much to do. It was necessary to develop more than 1,200 different machines, instruments, and various devices. Most often they were made by hand out of metal.

Now it can be said definitely that the enthusiasts worked productively. A single industrial complex was developed based on two deposits--gas and oil. Pumping Benoy gas into the Goyt Kort petroleum beds enabled the output of gas in the deposit to be increased 15 fold. In 1982 it will exceed 100,000 tons. Now each forced pressure well is regenerating five productive wells.

The Goyt Kort experience, according to the experts, is useful to many oil fields. It is even now being used in Western Siberia. In particular, gas compression stations are being built in Samotlor, and are pending at other oil fields. Grozny experts are preparing several major projects for their neighbors, the Azerbaijani and Stavropol oilmen.

We have visited a number of oil-producing regions, and have had the opportunity to become aware of the research of other scientists and producers on increasing oil recovery from the earth's depths. For example, in Tatariya new methods of extraction are being used at more than 3,000 oil wells. They have succeeded in increasing the output of valuable resources by 2.5 million tons through the use of chemical agents, sulfuric acid, residue gas, and air. This would seem to be a small increase, especially considering how much oil, let us say, the Tyumen oil fields produce in 2-3 days. However, some important circumstances should not be forgotten here. Oil is raised to the surface which, even yesterday, was considered irretrievably lost. Moreover, these 2.5 million tons of "black gold" were obtained, as in Goyt Kort, in a developed area, near refineries, without costs for new producing wells, roads, pipes, and without building new cities and workers' settlements.

I saw much that was instructive at the oil fields at Bashkiriya and the Kuybyshev and Perm Oblasts. There they feed "cocktails" of water, steam, and various surface-active substances into the strata. Nothing is left unused in increasing the oil recovery. In literally every region, I met with true enthusiasts of technical progress who do not wish to be content with losing half the resources. The main thing is that they see real channels through which a large part of the yet unrecovered reserves may be obtained. G M Akhmadeyev, chief engineer of the Tatneft petroleum association had some interesting thoughts on this:

"We have reached a situation in which working with old oil wells is more promising than drilling new ones. We are not the only ones who have reached the limit, where new sites do not compensate for the loss of output from the old ones. For example, in 1975, in Tatariya, 950 oil wells produced 103 million tons. Six years later, in order to extract 75 million tons annually, they had to sink 1,070 wells."

Being interested in these unexpected figures, we sought clarification.

"If that's the way it is, why don't they reorient on working with the old wells?"

"Then all the oilmen in Tatariya will have to drop everything else and turn to repairs, as if they were at the battle front. Repair brigades, which are usually also involved in increasing the yield of the reservoirs, are in the shortest supply. It may seem strange, but facts are facts, and at modern, fully automated oil fields, where smart instruments manage all the extraction processes, the repairmen continue to work by hand. No one is as concerned as they should be with equipping them technically. The search for chemicals necessary to increase the efficiency of productive strata is turning into an insoluble problem. The main trouble is the haphazard work both in our industry and in the planning and organization of work of the scientific and technical institutions.

We remind the reader that N M Degtyarev chief of the project to revitalize Goyt Kort, also complained about haphazard work. In Grozny also we were given many examples in which they would "for the sake of science" take a well, and pump something through it--air, flue gas, carbon dioxide, or chemical compounds--and "measure the effect" at the next well over, in order to write their dissertation. Matters frequently end with the dissertation, while antiquated technology remains in the oil fields. We met no less surprising facts in Kazan.

Anatoliy Fedorovich Repkin, secretary of the party bureau of the Tatar Scientific Research Institute for Petroleum Machine Building, at one time declared proudly at an election meeting:

"The collective has completely fulfilled plans set forth for developing equipment for new methods of oil extraction."

It turned out from his report that the scientists and designers here are ultra-modern. He said that they do not even waste time here on making prototypes, refinements, or alterations, but turn out advanced machines in full production straight "from the order list." The secretary also recalled that the institute is not only successfully fulfilling the program of scientific efforts, but also always wins prizes in the region's socialist competition.

To judge by the records and by the awards received for them, everything is all right. But once one becomes acquainted with the real state of affairs, the rosy haze which clouds the eyes of the institute's leaders vanishes without a trade. They refuse to manufacture and refine prototypes. In the pursuit of sham, ephemeral savings, they frequently begin production of clearly "untried" hardware. This was the case with the apparatus for the measured introduction of polymers. It was expensive, and turned out to be unwieldy and too complex. They tried the first apparatus in Bashkiriya at the Yuzhralanneft' oil fields. It didn't work. The second was tested in Tatariya, at the Leninogorskneft' oil field administration. The workers expressed 90 complaints.

Nevertheless the apparatus was somehow pushed through the interdepartmental commission, no doubt with conflict with its engineering "conscience." The institute received a face-saving go ahead: "Recommended for full production upon implementing comments and suggestions." They put the hardware in production at the Salavatneftemash production association. But perhaps it was put in the necessary condition just the same? Nothing of the sort. The report of competent specialists, signed by S E Sherman, deputy general director, All-Union Scientific and Production Association Soyuzneftepromkhim [petroleum and chemical industries] states in black and white: "The equipment requires improvement and modernization."

What do they say about the shoes which had to be returned to the shoemaker unworn? Rejects, hackwork. The institute, through, is in clover. It has met all its plans; its workers' bonuses are not harmed. But in the oil fields they pump polymers into strata with hardware in need of modernization.

However, the developers of new technology or new machines themselves are not always at fault for the fact that advanced methods of influencing the petroleum horizons are not adopted for a long time. Frequently they simply do not have the opportunity for large-scale implementation of their ideas. Useful, necessary assembly was developed at the Tatar Petroleum Scientific Research and Planning Institute (TatNIPI): A subsurface viscous oil heater. Tests showed that oil wells thus "heated" increase their yield by three to five times. But several years were required in order to make a prototype of the assembly, and it could not reach series production for an extra five-year plan. But it would still have been good, had they been able to make even prototypes. As it happens, even that cannot be done. The institute does not have its own experimental production base.

It is, of course, difficult to understand the position of the leaders of the Ministry of the Petroleum Industry, who over 25 years cannot resolve the question of creating proper conditions for the work of one of its major institutes.

Another, relatively new child of the industry headquarters, the Soyuzneftepromkhim petroleum scientific production association, turned out to be in no better shape. At first it was supposed that it would have its own pilot installation for experiments and a special experimental factory. But it obtained neither. They assembled the scientific associates in the usual way: tables and chairs were added to the offices...they were told to create and be bold! What came of this? The scientists would obtain under laboratory conditions some reagent which they thought could increase oil production in a deposit, and then would search months and years for chemical factories which would agree to run off an experimental batch. For the factories such orders are a knife across the throat. It is unprofitable for them to bother with such crumbs, and to change over their technology each time. Cases similar to the story of the apparatus for the measured introduction of polymers occur regarding new chemicals that enter full production without sufficient testing.

The only difference is that the designers and machine builders ironically call this method "from the order list," and the chemists say "from the test tube." Undoubted harm is done--both material and moral--in both variants.

The situation which has developed is a strange one. The importance of increasing the output of oil in operational, and especially in depleted beds, seems to be understood. Many thousands of people are working on the problem in the oil fields, in specialized factories, and in scientific research institutes. Tremendous experience has been gained in overcoming difficulties enroute to new mineral reserves. However, there is unforgiveable sluggishness in introducing effective innovations; there are shortcomings in organization, purposefulness, and in the comprehensiveness of the approach to this major state task. What is the matter here? For answers to these questions we referred to the executives of the ministries and departments directly responsible for the effective exploitation of the country's petroleum resources.

[8 Dec 82 p 2 Part II]

[Text] In conditions of ever increasing specialization of production, the efficiency of oil deposits depends on the efforts of many people, working in different branches of industry. Coordinating the activities of the headquarters of branches directly involved in exploiting the underground storehouses is especially important. After visiting the oil fields, the scientific research institutes, and the specialized enterprises of parts suppliers, and hearing the views and grievances of their experts, we decided to meet with the executives of a number of ministries charged with ensuring the efficient output of liquid fuel. First of all we set out for one of the main partners of the oilmen, the USSR Ministry of Chemical Machine Building. Talking with V F Makushin, secretary of the ministry's party committee, we touched on the relationship of his staff toward orders from oil field workers, the fulfillment of which permits increased oil recovery.

"Our relationship toward such orders is especially responsible," Valentin Fedorovich answered readily.

However, the party committee secretary found it necessary to qualify his statement:

"It is true that the ministry is somewhat late in developing some types of equipment and other technical resources, but I stress that on the whole we are coping well with our duties."

A V Pleykin, deputy minister of chemical and petroleum machine building; K A Kuznetsov, deputy chief of the central board of oil field equipment; and M S Skuditskiy, chief engineer of the all-union production association, Soyuzneftekhimmash, who participated in our discussion, energetically supported this assertion. Nevertheless, we had to tell them about the complaints of the oilmen. In particular we pointed out the stories concerning the apparatus for

the measured introduction of polymers, and concerning two dozen other assemblies which were designed in the institutes under the jurisdiction of the ministry, and manufactured in its factories. These were the same apparatuses and assemblies which at least needed to be modernized, if not completely remodeled before being put into operation. We did not receive a direct answer. On the other hand we did hear a lot of abstract opinions about the value of further improving the equipment being produced.

We tried to turn the discussion to the sphere of moral criteria. Why do some evaluate their work as an unqualified success, while other interested parties have well founded grievances about it? What about the situation with this same Tatar Scientific Research Institute for Petroleum Machinery (TatNIInefte-mash)? The group avoided discussing this ticklish subject.

Remembering the persistent instructions of the oilmen, we tried to clarify why the steam generators, "for the underground bath," (for heating strata) do not have reliable means of control. They work in the blind in the oil fields, not seeing what is going on underground.

"This is the concern of the Ministry of Instrument Making (Minpribor)," A V Pleykin noted briefly.

Each drill rod from the factories is turned with high frequency current, although this operation would be much more convenient and cheaper to do in the enterprises which produce them.

"We also have to complete others' work," declared M S Skudintskiy. "Here is a specific example. We produce deep-well units: specialized pumps combined with electric motors. Pumps are our business, but motors are supposed to be the job of the Ministry of the Electrical Equipment Industry. However, that ministry refused to do it, and we had to manufacture them ourselves. This is the way it is done. We do something for others; at times they do something for us."

Why is it "the way it is done"? It is as if specialization of industrial sections is based on whim, rather than on the requirements of raising industrial efficiency and economy.

Other questions also arise. Why must lack of coordination of plans and the actions of the industrial branch headquarters be "patched up" in far off oil fields? Why must the oil field workers, as they say, "bring to maturity" [make operable] trucks, machinery and materials coming off the factory assembly lines. It seems that the Ministry of Chemical Machine Building and its enterprises and branch scientific institutions must carry the full burden of responsibility for equipping the oilmen with durable, highly productive equipment. According to its head ministry, it is also called upon to obtain deliveries of appropriate quality sets of goods from the parts suppliers. Meanwhile, even those measures for introducing new methods of oil extraction which depend entirely on the leadership of the branch headquarters itself, are

still accomplished extremely slowly. How much has already been said about the need to build a unitized drilling rig factory in Ishimbay, or about increasing the capacities of the Svessa pump factory, as well as the present loading there.

The idea that each oil field was a Samotlor, bursting with gushers, turned out to be extremely tenacious. In reality, the age of gushers is short. To prolong the life of deposit, it is necessary to use in any methods, including chemical preparations. Paradoxical though it may be, we had to repeat this obvious truth more than once even in the USSR Ministry of the Petroleum Refining and Petrochemical Industry.

During our meeting with A V Donchenko and M V Zinin, deputy chiefs of the Ministry of the Petrochemical Industry, we asked why the petrochemists did not give the oil field workers the promised consignment of special reagents which were so extremely necessary for revitalization of the played out oil fields. We heard the same excuses as at the Ministry of Machine Building: "Not enough resources;" "something had to be cut out." And both of them, Anatoliy Vasil'evich and Mikhail Vasil'evich, vied in arguing fervently, with academic knowledge corroborated by a timely supply of figures, that "chemistry" adds some 3 to 5 percent to the yield of deposits, and that it would be better to concentrate "on physics": steam, fire, and gas. It was not difficult to follow the line of thought of comrades Donchenko and Zinin. Others are responsible for physical methods of influencing the petroleum horizons, while they are on the hook for chemical methods. They try with all their might to shift responsibility to their neighbors and protect themselves.

Although it would seem that what is or is not advantageous is debatable. Six year ago the petrochemists promised to produce the required experimental consignment of reagents, in order that the oil field workers could test them in practice. They assured the workers that they would then arrange full production of the effective chemicals. They did neither. No excuses can explain this away. It is necessary to do what was promised, and keep one's word.

The flub-ups from this ministry surprised the oilmen most of all since it, more than any other should be concerned about the overall increase in output of a valuable resource in the old oil fields, and in regions where refineries are concentrated. The Ministry of the Petrochemical Industry is already experiencing problems with the capacity of some factories. In such circumstances they should fight for each additional gram of oil in the habitable, built-up areas. But do they in fact? No!

The Ministry of the Chemical Industry also should have participated in this program of intensification of oil output, but it completely withdrew from fulfilling its obligations. Several institutions of the Academy of Sciences did not give promised assistance to the oilmen in the earlier planned volume of metallurgy.

Who determines what production, how much, and at what technical level things should be produced? This would seem to be clear. The main administrative departments are Gosplan, the State Committee for Science and Technology, and

the State Committee for Standards. It is these agencies which do not permit departmental self-interest to take precedence over state interests. But as we see, they have not succeeded in overcoming the narrow departmental approach to matters.

It was explained to us both at Gosplan and the State Committee for Science and Technology, that "sometimes it is advisable to consider, as exceptions, certain major projects as intra-branch projects." Consequently they leave it to the branch itself to worry about. Unfortunately, exceptions more often than not become the rule, and not without the knowledge of executives of these respected organizations. Once again Gosplan and the State Committee for Science and Technology agree with the Ministry of the Petroleum Refining and Petrochemical Industry proposal to exclude production of corrosion inhibitors from the general program. So the oilmen were given yet another kick in the shins. Meanwhile, 29-30 million rubles annually are spent on fighting corrosion in the Tatariya oil fields alone. There are some 30 associations like the Tatariya oil fields in the country. In multiplying the expenses one obtains a figure near a billion rubles. How can these losses be avoided? It is necessary for the oilmen to "reestablish" the projects crossed off of the petrochemists' plans, and themselves construct a plant for corrosion inhibitors. Since such a project is not their line of work, they spend much more on it than their partners "saved."

Thus, due to narrow departmental interests the advantages of specialization are lost, and the oil fields have to establish patch-work "natural economies." Over many years the oilmen have been unable to convince the metallurgists to produce pipe lining which will increase its reliability and length of service. Is it technologically impossible?

"Why impossible," objects A K Muxhmetzyanov, general director of the 'Tatneft' oil field. "In Leninogorsk we built a special conveyor where the interior surface of tubing string pipes are covered with glass. Soon we will start up another shop in which 300 kilometers of pipe annually will be protected by polyethylene."

"But is it truly impossible to force the metallurgists to accomplish required operations under factory conditions, and at a higher technical level? To order those pipes which are needed?"

"So far it hasn't been impossible. And do you know why? The metallurgists say: 'We deliver pipes to you in strict compliance with the demands of the All-Union State Standards. What else is necessary?'

The regular November CPSU Central Committee Plenum emphasized quite clearly: "If we truly wish to advance the introduction of new technology and new labor methods, it is necessary for the central economic organs, the Academy of Sciences, the State Committee for Science and Technology, and the ministries to not merely engage in propaganda, but to uncover and eliminate specific difficulties which interfere with scientific and technological progress."

Is it necessary to say how much the present role of the branch headquarters and its party committee in finding competent solutions to all questions related to the introduction of new equipment and technology is increasing?

When the oil field workers tasked the machine builders to technically support the plan for intensifying oil extraction, the "functions of the leading organization for developing equipment and specialized means for increasing the output of deposits" were given to the Tatar Scientific Research Institute for Petroleum Machine Building. For this purpose, the ministry provided the institute an additional copier and two motor vehicles. To undertake such a large and complex matter with such equipment is like trying to reach the North Pole in a cross country race. As we see, the other partners of the oil field workers have also not yet provided organizational and material support to those sections which are called upon to contribute to increasing the output of petroleum deposits.

Accomplishing a major, special program, involving a large number of participants is, of course, not a simple matter. However, practice convincingly indicates that the task is more successfully solved where party organizations strive to achieve close coordination of parts suppliers, and place the partners' orders under strict party control. Reference can be made to the experience of the Tatar CPSU Obkom, which created a special coordinating committee from representatives of all parties participating in introducing advanced technology into oil fields. What would be wrong with using this experience at the ministerial level?

"The earth's interior will not let us down if people don't let us down." These are the words of Academician Ivan Mikhaylovich Gubkin, patriarch of our petroleum industry. Today we would like to recall these words to all of those who have to overcome perhaps the most difficult horizon: the force of inertia, custom, and obsolete impressions that the earth's oil is immeasurable and incalculable, and that therefore we can disdain the laws of thrifte, wise and zealous management, and precise, prudent and well thought out joint efforts.

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CSO: 1822/122

OIL AND GAS

BRIEFS

RECORD SPEED DRILLING--The brigade of Foreman V Sidareyko yesterday drilled its 100,000th meter of oil well bore holes since the beginning of the year. This is a record speed for developing oil deposits in Western Siberia. The high speed work of the drillers will help the Surgut (Tyumen Oblast) oil field workers to develop the Yaunlor fuel deposits to industrial capacity. [Text] [Moscow TRUD in Russian 26 Oct 82 p 1] 9069

DRILLERS EXCEED NORMS--FRUNZE--The brigade of Drilling Foreman Yu. Luts, from the oil exploration expedition of the Kirgizneft oil association, has set a labor record. Competing for a worthy greeting to the 60th Anniversary of the USSR, it drilled here in Frunze an oil well 80 days sooner than the standard norms. The prospectors saved the state 55,000 rubles by reducing the cost of drilling. [By Correspondent P Laptev] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 2 Oct 82 p 1] 9069

NEW OIL FIELDS OPERATIONAL--NOYABR'SK (Tyumen Oblast), 13 Nov 82 (TASS)--A new group of oil fields, the Sutormin beds, has become operational in northern Tyumen Oblast. The flow of oil which has begun here is one of the most powerful--almost a thousand tons per day. Adjacent to the oil fields, a modern city of oil workers is being built, and electric power lines are being laid, at a fast pace. [Text]. [Moscow PRAVDA in Russian 14 Nov 82 p 1] 9069

AIDS TO EXPLORATIVE DRILLING--NEBIT-DAG (Turkmen SSR) 6 Dec 82--The new "Start" modular equipment sets have become reliable aids to oil prospectors. They are intended for geological and technical control of the processes of rock drilling. Two such sets, mounted on special cars, were registered in the deep bore holes at the Syrtlanly and Monzhukly wells. Their purpose is to study the insufficiently known mesozoic complex of deposits. Geologists link prospects for developing the oil and gas industry in a broad expanse of southwestern Turkmeniya to exploring this mesozoic complex. The "Start" sets help to look deeper down the shaft of the bore hole. [By Correspondent A Yezerskiy] [Text] [Moscow PRAVDA in Russian 7 Dec 82 p 1] 9069

CASPIAN FLOATING DRILLING RIG--BAKU--The floating drilling rig which has arrived at Bakin Bay is called "In the Name of the 26th CPSU Congress." Built by the Astrakhan Shipbuilding Association, it will drill its first prospecting hole in the Caspian. The shaft is planned to extend 6,000 meters. The greatest water depth in which the rig can operate is 70 meters. The

construction of such a highly autonomous floating rig enables three bore holes (one vertical, two inclined) to be drilled from one point. In the next few days it will begin its work on the banks of Turkmeniya. This year approximately 20,000 meters of rock, almost twice last year's total, have been drilled in the Caspian with the aid of floating rigs. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 1 Dec 82 p 2] 9069

COLLECTIVES EXCEED TARGETS--LEBEDYAN--The collective of the Lebedyan Machine Building Factory has shipped 50 pumps above its target number to consumers. Twelve of them were sent to the Urengoy oil field workers ahead of the planned time. The brigades led by A Lashkov, V Dvornikov and V Filatova are achieving the greatest successes in labor honoring the anniversary year. Each is exceeding its production target by 15-20 percent. [By Correspondent N Kilmov] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 30 Nov 82 p 1] 9069

MOBILE SEISMIC PROSPECTING INSTRUMENTS--MOSCOW--Equipment which the Moscow association Geofizpribor (geological and physics instruments) is producing increases efficiency of exploration. The enterprise collective has filled an important order for geologists prospecting for oil and gas. They have been sent a batch of "Progress-2" digital seismic prospecting sets. This equipment will make it possible to increase the speed of analyzing materials collected in the field. As it is mounted on an all-terrain vehicle, the equipment can also easily be put in place, even where no roads exist. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 17 Nov 82 p 2] 9069

CASPIAN SEA OIL PROSPECTING--BAKU--Yesterday a new prospecting oil well was connected to the main pipeline. This well was drilled at the oil deposit imeni 28th of April. The bore hole shaft is 3,600 meters long, and has given the geologists the capability of determining precisely the magnitude of the strata, and of shifting to operational drilling in this section. A total of three oil wells have been drilled at the oil deposit imeni 28th April. Their output matches another "dry land" oil field. All are laid from one stationary steel island. The oil deposit imeni 28th of April is important in prospecting for oil on the continental shelf. Currently, major efforts of mineral resources prospectors are concentrated here. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 20 Nov 82 p 1] 9069

OIL WELL REPAIR ACCOMPLISHMENTS--CHELEKEN--As a result of high quality subsurface and capital repairs of the oil wells, the collective of Chelekenmorneftegaziprom (Cheleken off shore oil and gas industry) has received more than 10,000 additional tons of the "black gold" since the beginning of the year. The capital and subsurface repairs collective led by Mukhi Mukhiyev has repaired 47 oil wells above the planned number. Socialist competition in honor of the 60th Anniversary of the USSR is helping to achieve good results. Labor productivity in subsurface repair brigades has risen 14.3 percent, while the cost of repair work has declined by 194,000 rubles. Many advanced collectives have already completed the plan for two years of the Five-Year Plan. The subsurface repair brigade of Fatysh Amannullayev was one of the first to achieve this. It is now working on the February 1983 targets. The brigades of Formen Aman Tangriberdyev and Agoyla Ovezov are leading the way in capital repairs. The Komsomol-Youth brigade of A Tangriberdyev overfulfilled

the targets for 2 years of the Five-Year Plan by 14.7 percent, and is now working on the March 1983 schedule. The brigade of A Ovezov is also working on the March schedule. [By Correspondent V Lebed'] [Text] [Ashkabad TURKMENSKAYA ISKRA in Russian 5 Nov 82 p 1] 9069

NAR'YAN-MAR OIL EXPLORATION--The brigade of V V Pavlyukov, bearer of the order Red Banner of Labor, from the Nar'yan-Mar oil and gas exploration expedition, has drilled the first deep explorative well in the very center of the Bol'shezemel' tundra. Seismic prospecting results speak of the prospects for the northeast European polar region. [By V Tolkachev] [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 22 Oct 82 p 1] 9069

PROSPECTING INSTRUMENTS DELIVERED--The equipment which the Moscow association Geofizpribor (geological and physics instruments) is producing enables the efficiency of prospecting to be increased. The enterprise collective has fulfilled an important order for geologists prospecting for oil and gas. They have significantly improved oil field equipment, and have saved the enterprise tens of tons of raw and other materials. The collectives of oil fields 2 and 3 and the subsurface and capital oil well repairs shop were very successful in introducing innovations. The innovations have saved 126,000 rubles. [By Z Rzayev] [Text] [Ashkabad TURKMENSKAYA ISKRA in Russian 15 Dec 82 p 4] 9069

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NON-NUCLEAR POWER

SHAMKHORSKAYA HYDROELECTRIC PLANT'S FIRST UNIT STARTS UP

Baku VYSHKA in Russian 23 Dec 82 p 4

[Article by A. Gamedov: "The Shamkhorskaya GRES's First Hydroelectric Power Unit Has Given Current"]

[Text] Yesterday, on 22 December, during the portentous celebration of the glorious anniversary of the Soviet state--the 60th anniversary of the forming of the USSR, the report came from Shamkhorskaya GES: "The GES's first unit has been started up for industrial operation."

Like almost every first report about a great labor victory, it was brief, but the sparse line of the report encompassed seven years of labor by the Azenergostroy [Trust for the Construction of Power-Engineering Facilities in Azerbaijan] collective and its closest partners--Azenergomekhanizatsiya Trust, Gidromekhanizatsiya Trust, and Leningrad's Spetsgidroenergomontazh [Specialized Trust for the Installation of Hydroelectric Power-Engineering Equipment], as well as the Bakgidroproyekt [Baku State Institute for the Design of Hydroelectric Power Stations] design organization.

The first scoop of soil for erection of the backwater and stream-bed dams was inserted in July 1975. Representatives of the first detachment of construction workers are working there even today. They include chief of the equipment-operators' section N. Mustafayev, heavy-duty BelAZ and KrAZ truck drivers M. Kuliyev and G. Mustafayev, and excavator operators K. Safikhanov, I. Seregryanikov and M. Bakhshaliyev.

The largest amount of work fell to the lot of A. Agamirov's section. His collective erected a construction-operations spillway and the GES building, with the head and station structures. Agamirov was a pioneer in introduction of the cost-accounting method among hydroelectric-power facility builders and the first to conclude a contract with the Shamkhorskaya GES Construction Administration management. Since then this progressive method of organizing construction has expanded its bounds, it has been introduced in other trust subunits, and the increase in work performed since the start of the year has been more than 13,000 rubles.

The power-engineering builders have been laboring with initiative in all sections, finding ways to reduce operating costs. The suggestions of A. Mamedov, chief of the Shamkhorskaya GES Construction Administration, to change the design of the stream-bed dam's drainage system and of the supports for the back of the backwater dam enabled more than 300,000 rubles to be saved. Chief of the administration's operating section, K. Alekperov, improved the scheme for supplying heat to housing in the settlement.

At the construction site, for the first time in our republic's history, an automatic concrete pump was used in conjunction with an automotive vehicle. The concreting of the spiral well, the turbine pit, and the most important sections of the GES building's retaining wall were greatly speeded up by means of it.

Each year the work pace has accelerated. The organization of competition under the Workers' Relay principle, which includes equipment suppliers--collectives of the Kharkov Turbine Plant, Novosibirsk's Elektrotyazhmash Plant, the Zaporozhye Transformer Plant and Armenian and Georgian enterprises, helped in this. Builders of the Inguri GES, the Toktogul'skaya and Nurekskaya GES's and other hydroelectric power stations came here. The country helped our contracting organizations generously.

All the equipment--the turbine (of original design), the hydroelectric generator, the transformers, the oil pumps, the compressors and other things--was installed by the collective of the Transcaucasus Section of Spetsgidroenergomontazh [Specialized Trust for the Installation of Hydroelectric-Power Engineering Equipment]. Active work by engineers A. Makushnikov and A. Sysoyev, brigade leaders A. Sudeykin, V. Petukhov and S. Zeynalov, mechanics M. Kagramanov and M. Voronov, and others insured success.

"We are proud of the fact that, in competing for the honor of a worthy greeting to the 60th anniversary of the forming of the USSR, we kept our word--we put the first hydroelectric unit of the Shamkhorskaya GES into operation on 22 December, on Power Workers' Day," said Azenergostroy manager R. Gomidov. "The unit, of 190,000 kW power, has begun to give current to the Transcaucasus Electric-Power Network. The hydraulic engineering complex also includes the Kura housing settlement, where well-appointed homes are being erected for construction workers. The settlement and the production capacity that have been created here will serve as a base for further development of construction in the region. The hydraulic-engineering complex has an enormous water reservoir, whose waters will irrigate 75,000 hectares of land in three rayons. In 1983 our main efforts will be involved in the construction of the machine canal, the main arterial for feeding water to the vineyards and cotton farms. And we will work tenaciously on this facility so our labor will help in the successful implementation of the country's Foodstuffs Program and the decisions of the November 1982 CPSU Central Committee Plenum and the December 1982 Azerbaijan Communist Party Central Committee Plenum."

11409
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NON-NUCLEAR POWER

SECOND UNIT OF AZERBAIJAN REGIONAL POWER PLANT STARTS UP EARLY

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 10 Dec 82 p 1

[Article by N. Velichko: "There Is Voltage!"]

[Text] The second power unit of the Azerbaidzhanskaya GRES has given power to Transcaucasia's Unified Power System a month ahead of schedule.

It is the GES's machine room. Construction workers, installers and operators have gathered around the individual-unit and central control panels. Turbine-operators' brigade leader Yu. Toroptsev stands alongside installers' brigade leader Agaza Aliyev, and just a bit to the side is Fizuli Mamedov, construction-workers' brigade leader, and setting-up workers' sponsor Ye. Moiseyev. Like everyone else who was involved in the erection of this 300,000-er of the Azerbaidzhanskaya GRES, they are a bit anxious. How will the gigantic boiler unit behave, and are the pipeline joints reliable? For the pressure and temperature, when it gets up to design capacity, are no joke: 255 atmospheres and 555 degrees.

Yu. Toroptsev's and Fizuli Mamedov's brigades have set the tone for the whole construction project. A year ago they turned over the first power unit of the Azerbaidzhanskaya GRES's, also a month ahead of time, and here now is startup of the second one.

...The hum of rotating turbines, which is well known to experienced builders of power-engineering facilities, swims into the room's silence. Yu. Toroptsev listens to it attentively. Behind it is the selfless work of 3,000 builders and installers and workers of the Leningrad Metals Plant Production Association, which delivered the excellent turbine ahead of time to Mingechaur, and the good, coordinated work of the collectives of 130 enterprises from 80 of the nation's cities, which skillfully supported Azerbaijan's power-engineering construction workers in their striving to introduce the capacity into operation ahead of time. When, at the start of this year, the power-engineering construction workers appealed to the Leningraders to send the turbines for the second power unit ahead of schedule, the latter willingly responded to the request of their Azerbaijan friends. The Mingechaurites know well the names of the Leningrad turbine makers. The brigade of Hero of Socialist Labor and well-known Leningrad lathe operator I. Morozov, his relief operators Yu. Khojanov and M. Kuznetsov, planer operator I. Velikokhatskiy, vertical boring and turning machine operator B. Kuznetsov, assembler-mechanic I. Dekun, and others machined the largest parts.

Many interesting technical solutions were applied during construction of the new unit of the Azerbaydzhanskaya GRES. Year-round cooling of the turbine with cold Don water at a constant temperature of 14 degrees affects beneficially the station's most important operating indicator--fuel consumption. Only about 325 grams of standard fuel equivalent will be expended in generating 1 kWh of electricity at the Azerbaydzhanskaya GRES. Thus the GRES is the most economical in the Caucasus. A computer will help to control the station's operation. It was built into the scheme for controlling the GRES.

...The rotor's rotating speed reaches 3,000 rpm. The most important moment has come. Carrying out the order of the Azglavenergo [Main Power-Engineering Administration of the Azerbaijan SSR] controller, shift chief Allakhverdi Aliyev prepares the unit's electrical system and then swings the air circuit breaker. The generator takes up a load.

There is voltage! The second unit has given electrical current.

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NON-NUCLEAR POWER

BAYPAZINSKAYA GES BEING BUILT ON CREDIT

Moscow STROITEL'NAYA GAZETA in Russian 26 Dec 82 p 2

[Article by S. Lashchenov, chief engineer of Tadzhikgidroenergostroy [Trust for the Construction of Hydroelectric Power Engineering Facilities in the Tajik SSR]; and V. Korostoshevskiy, chief of the trust's Economic Analysis Laboratory: "A GES on Credit"]

[Text] The November 1982 CPSU Central Committee Plenum directed builders to the most rapid achievements of high final results. Maximum initiative and enterprisingness must be shown in solving production questions, it was emphasized at the plenum. Expansion of the economic independence of construction and installing organizations will help greatly in developing these qualities. And experience in erecting the next hydroelectric power station on the Vakhshskiy cascade--the Baypazinskaya--confirms this.

For the first time in the USSR Minenergo [Ministry of Power and Electrification] system, it is planned to turn a hydroelectric station over in turnkey style, that is, after the complete readiness of all four units. Hence there is a basically new organization of affairs. Nurekgesstroy [Nurek Hydroelectric Power Construction Administration], which became the contractor, concluded a contract agreement with the station's board for the full budget-estimated cost of the GES, in the amount of 170 million rubles. The board, just like Nurekgesstroy, is a part of our trust. Thus the functions of client and contractor were concentrated in one pair of hands. Tadzhikgidroenergostroy undertook full responsibility for erecting the GES, beginning with the order for the design and budget-estimating papers and ending with the turnover of the station for permanent operation.

Initially the question arose: isn't it possible to get along without the board, isn't this element with additional expenditures superfluous? After weighing all the pros and cons, we came to the conclusion that, at the given stage, the board is needed, primarily to do the work, great in volume and high in importance, of formulating and placing the orders for equipment and special materials and of implementing these orders. And the board's staff is not large--five workers. It is not excluded that, in time, perhaps in the year before startup, the board will be eliminated.

And now about the essence of the experiment. According to the national economic plan, the Baypazinskaya GES should go into operation in 1987. But the Nurekgesstroy collective has committed itself to introducing it at full capacity during the

11th Five-Year Plan. Such a winning of time will enable 840,000 tons of standard fuel equivalent to be saved nationwide. In monetary terms this is 15 million rubles.

Careful analytical work preceded development of the contract agreement, of course, and the group for preparing for operations included representatives of many sections of the trust and of Nurekgesstroy. In a short time they examined, revised and transmitted for production the design and budget-estimated documentation and made up a combined schedule for the operations.

The contract was augmented by a credit agreement between Nurekgesstroy and the local branch of USSR Stroybank. According to this document, the bank committed itself to granting the contractor credit for the full amount of the work, according to the design and the budget estimate. Our trust, in turn, gave a guaranteed commitment to observe strictly the terms for credit-granting, which are called for by existing statutes: to carry out the plan for accumulations, to pay the suppliers with precision, and so on. As for the bank loans, they will be liquidated after the GES is introduced into permanent operation. Where the contract terms are violated, obviously, appropriate sanctions will be laid on the contractor in the form of a higher rate of interest for the credit.

The new method of cost accounting motivated the hydraulic engineering builders pecuniarily and, at the same time, raised their responsibility for the turnkey introduction of the facility. Strict monitoring over schedule fulfillment was established. Workers were regularly given part payment of the bonuses specified for introducing the facility into operation. All this helps to develop people's initiative.

For example, at the suggestion of specialists of the trust and of Nurekgesstroy, a foundation pit was excavated under the GES building simultaneously with the driving of a tunnel for diverting the river. But danger of flooding of the cofferdam arose. The specialists proved that the risk in this case was not great. As a result, the builders laid the concrete under the station's power units a year ahead of the specified deadline.

Strictly, the GES is being erected with this settlement: the more rapidly the complex is erected, the greater the funds that will be saved vs. the budget estimates, and the greater the accumulations that will be placed at the builders' disposal.

Here is another example. From Nurek (the base of the industry is concentrated there, and the builders live there) to the indigenous village of Baypaza is 30 km. For a long time the Uzen road, which creeps in serpentine fashion along the mountains, has passed here. It could not, of course, satisfy the builders, for whom outsize transformers, hydroelectric power units, and so on were to be sent to Baypaza. Tadzhikgiprotransstroy [Tajik State Institute for Transport Construction Design] proposed to make the road almost twice as wide, to straighten out part of it, and to build individual sections from scratch. It was proposed that the route be laid along a ledge above the gurgling Vakhsh and to reinforce the shore with concrete walls.

The builders did something else: they cut into the rock and thereby diverted the roadbed from the dangerous shore. The new variant proved to be 800,000 rubles

cheaper. Laying the road has already come to an end. In half a year, truck and trailer units will pass over it with components for the first power unit.

We also dispensed with temporary LEP-35's [35-kV electric-power transmission lines] and proposed to push through erection of the permanent LEP-220. This cut costs by 500,000 more rubles.

The basic equipment for Baypaza is sent by our tried and tested friends in the Workers' Relay collectives of Kharkov, Sverdlovsk, Zaporozhye, Leningrad and other cities of the country. Good working contacts with them have been arranged.

If one is to undertake the erection of a large GES exclusively on credit, one must be completely confident of one's powers. The Nurekgesstroy collective is harmonious and experienced and it has its traditions. The new station basically is being built by the same workers and specialists who erected the celebrated Nurekskaya GES imeni L. I. Brezhnev ahead of time, underwent there an excellent labor hardening and acquired experience. Among the veterans are the concrete-workers' brigade of Hero of Socialist Labor M. Sharifov and the equipment-operators' brigade of A. Lysenko. The carpenters' brigade of V. Titov, the roadbuilders' brigade of V. Safonov, the drivers' brigade of V. Shurov, the blasthole-drillers' brigade of V. Kozhinov and the erectors' brigade of G. Trebugov are working excellently. Most of them are members of the brigade leaders' council. The council reviews and resolves urgent production questions.

Obstacles are being encountered on the path to the cherished goal. The overall pace is being maintained remarkably by the Tajik Administration of All-Union Gidrospetsstroy [Association for Special Hydraulic-Engineering Construction] of USSR Minenergo [Ministry of Power and Electrification]. Its Nurek section, which has been given a broad work front, is manned by little more than half.

Two years have passed since conclusion of the turnkey contract. Time has shown that Nurekgesstroy and its subcontracting organizations are capable of carrying out the assigned task. Work is proceeding successfully today at all the main GES structures. The combined schedule is being adhered to.

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NON-NUCLEAR POWER

RESERVOIR BUILDERS CLAIM NOT ENOUGH ELECTRICITY IS ALLOCATED THEM

Moscow PRAVDA in Russian 18 Nov 82 p 2

[Article by workers of the Construction Administration of Gidromekhanizatsiya Trust: A. Nikulin, senior suction-dredge electrician; A. Fedyushkin, electrical installer of the administration's electrical department; Ye. Shubin, chief electrical installer; and N. Frolov, suction-dredge chief (Gorkiy): "The Forking of the Plan"]

[Text] Our Construction Administration of Gidromekhanizatsiya Trust is doing the hydraulic fill work for protective embankments connected with building a reservoir for the Cheboksary GES. It also operates in new microrayons of Gorkiy. During the last five-year plan we did not cope with the tasks, but we are now working successfully, and the plan is being overfulfilled, beginning with the current plan, as a result of energetic measures adopted by the Gorkiy Oblast CPSU Committee and the oblast ispolkom.

But there is a paradox in this: the better that matters go in the collective, the more difficult the economic position we find ourselves in, and the greater the difficulties that face us. And this happens because of deficiencies in planning.

Our work, although it is complicated, is completely amenable to the setting of standards. It is known how much electricity must be expended for the hydraulic fill for each kilometer of embankment, and for the movement of each cubic meter of soil. It would seem that the ceilings for electricity should be assigned in precise accordance with these standards.

Far from it! Last year we did an amount of work for which 47 million kWh of electricity were required. But we are allotted only 31.66 million kWh. The year before last the "forking" was 34.98 and 22.5 million kWh, respectively.

When the administration has not coped with the plan, we were forgiven the additional consumption of electricity. But as soon as the collective's work catches up, the USSR Ministry of Finance, in precise accordance with the established rules, requires payment for the electricity we have consumed above the ceiling, at increased rates, and this comes to more than a million rubles. The total is not small, it completely exceeds the profit that the administration obtains for good work! It follows directly from this that the collective is left without incentive funds, and all the hydraulic-equipment operators do without bonuses.

Where is the logic here? There is clear error here in the plans--the noncorrespondence of goals for production volume with ceilings on electricity. Instead of investigating and solving the problem in businesslike fashion, superior organs impose sanctions on a collective that is guilty of just one thing--operating smoothly and with high productivity.

NON-NUCLEAR POWER

KAZAKH POWER-PLANT WORKERS EXHORTED TO PREPARE BETTER FOR WINTER

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 4 Sep 82 p 1

[Editorial: "Get the Electric-Power Stations Ready for Winter"]

[Text] A mighty production potential which enables the most modern and complicated problems of developing the economy to be solved has been created in Soviet Kazakhstan. The value of the republic's fixed capital now exceeds 90 billion rubles. We are now producing daily more than 133 million rubles' worth of gross social output. In other words, the value of each workers' minute has risen sharply. That is why an active drive to make maximum use of time and to eliminate idle time of machinery and equipment is one of the chief prerequisites for increasing production effectiveness. Power-engineering workers have a leading place in this drive.

The course of anticipatory development of key branches of the national economy that the party has undertaken is founded primarily upon rapid growth in the generation of electricity. Our republic has a huge power-engineering complex. Its capacity is more than 13 million kW. Last year it generated almost 64 billion kWh of electricity. Power engineering is being reequipped on a modern technical base, and its capacity grows constantly. However, the growth in demand for electricity still exceeds the capacity available for generating it. Thus it is exceptionally important that existing power stations achieve rhythmic operation and that power generation be increased. Especially great attention should be paid to this when cold weather breaks out, when all enterprises of the national economy operate under great strain and household energy consumption rises sharply.

Meanwhile, the fall-and-winter period of 1981-1982 revealed a large number of serious deficiencies in the electric-power supply. The republic's Minenergo [Ministry of Power and Electrification] enterprises did not cope with the plan for generating electricity in the fourth quarter of last year and operated unsatisfactorily in the first quarter of the current year. This leads to certain large enterprises of various branches of the economy and to some communities being placed on starvation rations and to irretrievable losses in the production of output. Deficiencies in the operation of heat-and-power centrals were explained by the fact that the repair campaign and preparations for winter were poorly conducted. The matter reached the point where 6 of the 11 large operating electric-power stations went into last winter without a certification of technical readiness for operation during the cold period of the year.

Definite conclusions were drawn from this lesson. The republic's Minenergo enterprises and organizations improved the conduct of the preparatory campaign for

acceptance of the loads of the fall-and-winter period of 1982-1983. The necessary equipment and machinery were allocated, and help in the additional delivery of steel tube, rolled metal, bulldozers and various materials and cable products was extended through USSR Minenergo funds. A republic staff for making preparations for winter was established under Minenergo. Substantial help is being extended by local party and soviet organizations in the matter of placing orders for the manufacture of various parts and components that are needed for repair, and questions of allocating additional human and material resources are being solved responsively. All this, of course, could not help but influence positively the overall progress of the preparatory campaign.

However, as indicated by a check conducted recently by Kazakh SSR Committee of People's Control organs, Minenergo and its organizations still have not carried out completely the repair work that was planned. Out of the 45 boiler units, with a productivity of 13,200 tons of steam per hour, and 34 turbines, with a capacity of 3,050 MW, that were specified, 41 boilers and 31 turbines were repaired. The managers of some power systems and enterprises are repeating last year's mistakes.

For example, the work of Ekibastuzenergo [Ekibastuz Regional Power Association], particularly Ekibastuzskaya GRES-1, provoked much reproach at one time. But even now the situation has not changed for the better. Electric-power station repair is being conducted at a slow pace. Thus, at Ekibastuzskaya GRES-1, repair of the first 500,000-er power unit is being performed with a lag of 25 days behind the planned schedule because of shortages in the supplying of materials and equipment and a lack of the mandatory contrivances and rigging. The station's fuel-transporting department is in an unsatisfactory state, but its repair is not being conducted as planned. Of 16 measures for preparing the department for the winter with deadline for completion in the first half of the year, only 6 have been executed up to the present. The incompleteness of construction and installing work and the low operating level of the power units at GRES-1 have caused the station to operate unsteadily up to now; since the start of the year, the units have been switched off more than 100 times for a total duration of almost 5,000 hours. It is not difficult to estimate how much electricity could have been generated during this time!

Repairs are lagging greatly behind the planned schedule at the Dzhambulskaya TETs and the Yermakovskaya GRES, Kzyl-Ordinskaya TETs-6, the Dzhezkazganskaya Electric-Power Station, Pavlodarskaya TETs-3 and Karagandinskaya GRES-1.

The operating stability of all branches of the national economy depends greatly upon the precise and uninterrupted operation of power-engineering enterprises. A good electric-power supply and normal provisioning of heat during the fall-and-winter period are especially important. Based upon this, local party and soviet organizations, the corresponding services of the republic's Minenergo, the economic managers and the party, trade-union and Komsomol organizations of heat and electric-power stations are obligated to speed up the pace of preparing to accept the cold-season loads and to make up as quickly as possible for what has been neglected.

The power engineers have a vast construction program this year. Its implementation will increase the branch's capacity and raise the sophistication of operations. Unfortunately, this program is not being carried out. During the first 7 months of the year less than a third of the fixed production capital of the goal for the first three quarters was put into operation, and capital investment was not being assimilated completely. Matters of building the Guryev-Kulsary power transmission

line, expansion of the fourth phase of the Ekibastuz TETs, and erection of the Karagandinskaya GRES-2 and the Ust-Kamenogorskaya Substation, based on 500 kilovolts, are proceeding especially unfavorably in this regard. The client--Minenergo--should make a radical change in capital investment, both that of its own forces and that of the contracting organizations' forces.

The power workers' socialist competition in honor of the 60th anniversary of the forming of the USSR is revealing the best collectives. Using their experience, the power workers should be prepared completely for operation during the difficult fall-and-winter period. By speeding up the introduction of new facilities into operation, mastering design capacity ahead of schedule, fulfilling and overfulfilling plans for generating electricity, and intensifying the regime for saving all resources, they will achieve labor successes. A substantial contribution will thereby be made toward solving the tasks posed by the 26th CPSU Congress and the 25th Communist Party of Kazakhstan Congress.

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NON-NUCLEAR POWER

WORK ON NEWEST POWER UNIT FOR MOSCOW TETS-23 PRAISED

Moscow MOSKOVSKAYA PRAVDA in Russian 5 Dec 82 p 1

[Article by A. Antonov: "If It Has Been Promised...."]

[Text] According to the plan, a power unit with a capacity of 250,000 kW which will supply 310 gigacalories of heat energy should be installed at Kuybyshevskiy Rayon's TETs-23 by the end of the year. Right now this is one of the capital's most important construction projects that are due for early startup.

The work is in full swing. Hydraulic testing (testing under increased pressure) has been completed successfully, and now the heat-insulating process is being conducted. Installation of the turbines is going on at the same time.

Three such units are already operating at TETs-23. They are supplying electricity and heat energy not only to Kuybyshevskiy Rayon but also to the capital's Sokolnicheskiy, Pervomayskiy, Dzerzhinskiy and Babushkinskiy Rayons. But Moscow is expanding. A multitude of new housing will appear in the near future on the land served by TETs-23. The new power unit is intended for housing that is under construction or still only in the design stage. This much energy is adequate for supplying a city with a population of 50,000-70,000.

The power unit should be installed by 30 December, but Tsentrenergomontazh [Trust for the Installation of Power Equipment in the Central Economic Region] workers have committed themselves to turning it over 8 days early, by 22 December, on Power Workers' Day. They are firmly convinced that their commitment will be carried out. There has not been a case in practice where the collective has let someone down.

More than 1,000 people are now working on installation of the power unit. Veterans who have been working in the trust for more than 20 years are toiling here. Among them are electrical welder Raisa Alekseyevna Timokhina, electrical welders' brigade leader Mikhail Aleksandrovich Kobisskiy and pipeline workers' brigade leader and Knight of the Order of People's Friendship Anatoliy Ivanovich Ozornov. There are also many youths. Working on installation of the high-pressure pipelines is the Komsomol Youth brigade collective of Andrey Fokin--a collective they jokingly call the family collective. There are four Fokin brothers in it.

The time spent to erect the installation was cut through the experience that has been gained. The collective has already erected three units here, as well as a higher-powered (800,000 kW) installation at the Ryazanskaya GRES. For example, the

chief of the trust's Installing Administration, V. Mitrofanov, said that in Ryazan a new method was found for consolidation, that is, for assembly of the units and of elements of the power-engineering equipment. Instead of performing these consolidations while erecting the department, it was decided to do it earlier. Much time was saved.

Creative analysis and rationalization are components of the trust's success. Thus, for example, I. Seleznev, supervisor of an integrated brigade of turbine workers, suggested contrivances for shifting of the rotors and of the oil panels. The production process, on which several hours have been spent, now takes 15 minutes. No few reserves were found also by combining trades. Most workers, in addition to their basic specialty, have mastered the work of gas-torch cutter, electrical welder and rigger.

No doubts can arise on anyone's part, certainly, about the importance of increasing labor productivity and the more complete use of worktime. But, in my view, a guarantee of successful work consists primarily in the fact that the trust has become, so to speak, a second home for the installers. The majority of them have only one entry in their work books. What are the reasons for such stability of personnel? I was a witness to how the chief of the installing administration pushed through a round-the-clock buffet for his workers (work in the section goes on in three shifts). And he paid as much attention to this as to solution of the most important production problem. Apparently this is a minor detail, but still, it seems to me that it permits an answer in some measure to the question of why people do not leave the trust.

Little more than 2 weeks remain before startup of the power unit. A characteristic of these days is shock work, a striving of each worker of the trust to celebrate the motherland's anniversary with a new achievement--the introduction into operation ahead of time of a high-capacity powerunit.

11409
CSO: 1822/119

NON-NUCLEAR POWER

TAJIK WATER-POWER STATIONS AID AGRICULTURE WITH POWER, WATER

Dushanbe KOMMUNIST TADZHIKISTANA in Russian 24 Dec 82 p 2]

[Article by N. Mirzoyev, deputy chief of Tadzhikglavenergo [Tajik SSR Main Administration for Power and Electrification]: "Power for the Village"]

[Text] Power engineering has been assigned no small role in the solution of the Foodstuffs Program. Hydroelectric-power complexes with large reservoirs not only provide for meeting the farms' requirements for electricity but also guarantee a water supply for the land. In Tajikistan the reservoirs of the Kayrakkumskaya and Nurekskaya GES's are working for the Foodstuffs Program. A still larger body of water, one of 13.3 billion cubic meters, will be erected at the Rogunskaya GES. Introduction of this hydraulic-engineering complex into operation will enable 17,000-18,000 hectares of arid land in our republic alone to be irrigated.

The mighty force of electricity will help to create artificial streams, to develop new lands, and to grow good harvests of cotton, grain, fodder crops, vegetables and fruits on them. In the fields and livestock departments, in workshops, in hothouses and in canning and processing departments--everywhere that electricity is used widely, the effectiveness of agricultural production is much higher. For example, the use of a set of electrical equipment for controlling production processes at large livestock-raising complexes enables labor expenditures for the production of a quintal of meat to be reduced almost 8-fold.

The consumption of electricity in our republic rises steadily. During 1981 and the first of this year alone, 3.79 billion kWh were released to customers. It must be noted that agriculture's consumption of electricity in the Tajik SSR exceeds substantially the average indicator for the country as a whole. The growth of electrical consumption in the countryside is caused not only by population increase but also by increase in consumption for production, municipal and household needs. Electric power is being used increasingly widely for preparing food, for air conditioning and, in the mountainous regions, for heating.

It is planned to increase considerably during the 11th Five-Year Plan the production of goods and to increase the rural economy's efficiency with the broad social and economic program for transforming the village that was approved by the 26th CPSU Congress. Because of conversion to an industrial base, much agricultural production--livestock-raising departments and poultry factories--do not tolerate even brief cutoffs of electric power. This means that they should have a reserve and, in some cases, even an autonomous electric-power supply. Last year alone

Tadzhikglavenergo worked to install a reserve power supply at 15 facilities, and this year at least 20 will receive it.

The power workers of our administration are making their contribution to realization of the Foodstuffs Program. In the year of the 60th anniversary of the USSR, competition has been energized in all subunits. The socialist commitments that have been adopted for extending organizational and technical assistance to the republic's kolkhozes and sovkhozes by way of servicing electrical equipment are being carried out successfully. In the lead are the Pendzhikent and Yuzhnoye power-grid enterprises.

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NON-NUCLEAR POWER

BRIEFS

TURKMEN RURAL POWER LINES--Chardzhou--Current has been fed to the new central farmstead of the Amudar'ya Breeding Sovkhoz of Dostlukskiy Rayon. An 8-kilometer electric-power transmission line has been put into operation here. In the not so distant future similar arterials will also be laid to the sovkhoz's remote shepherd camps. The oblast's remote communities are being electrified at a speeded-up pace today. Right now erection of the 12-km Megendzhik-Kelif power transmission line is being completed. A 45-km high-voltage line is being laid to the Akaltynskiy tract which is being established in the Karsha zone of the main canal. It will greatly speed up the pace of development of the virgin lands. [Turkmen Information Agency] [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 24 Dec 82 p 4] 11409

POWER FOR TURKMENIA OILFIELDS--Ashkhabad--Electricity has been transmitted to remote oilfields of West Turkmenia. The 250-km high-voltage Ashkhabad-Kizyl-Arvat power line has been turned over for operation here. Conversion of the oilfields to a reliable centralized power supply will help to build up recovery of the raw material. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 16 Dec 82 p 1] 11409

DONBASS RURAL POWER LINES--Donetsk--The construction of an electric-power transmission line has been completed close to the village of Michurino of Telmanovskiy Rayon in the Donbass. The LEP [electric-power transmission line] will provide additional sources of power to new livestock-raising and hothouse complexes of the Kol-khoz imeni Telman. Almost 30,000 km of rural LEP line has been laid in the industrial district. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 7 Dec 82 p 1] 11409

POWER LINE ACROSS ANGARA--Bratsk--Bratskgesstroy [Bratsk Trust for the Construction of Hydroelectric-Power Stations] needs 148 km of wire for the LEP-110 [110-kV electric-power transmission line] that will cross the Angara at the tailrace of the Boguchanskaya GES. The power line will reach a new industrial zone, where explorers have detected enormous reserves of diabase for erecting the dam that is being built for the hydroelectric-power station. The distance between the shore supports of this power bridge will be several hundred meters. Naturally, it is practically impossible to install the heavy high-voltage wire between them. Therefore two more intermediate columns almost 150 meters high are being raised in the Angara's freezing waters. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 22 Dec 82 p 4] 11409

ARKHANGELSK-KOMI POWER LINE--Arkhangelsk, 2 Jan--The 220-kV Kotlas-Mikun arterial electric-power transmission line has been put into operation. It is 217 km long. The LEP [electric-power transmission line] was built under complicated conditions: the powerbridge had to be erected across the Vychegda River, and tens of taiga streams and swamps had to be attacked. Despite the difficulties, the line was put

under an industrial load ahead of the planned deadline. The new LEP has enabled the Komi ASSR power system to be hooked up to the country's Unified Power System. [Stringer N. Golitsyn] [Text] [Moscow PRAVDA in Russian 3 Jan 83 p 1] 11409

MORDVINIAN POWER LINE--Krasnoslobodsk (Mordovskaya ASSR)--The high-voltage LEP [electric-power transmission line] that was laid from Kovylkino to Krasnoslobodsk has provided an uninterrupted supply of electricity to remote regions. The line is about 55 km long. However, the builders had to overcome quite a few obstacles--forests, swamps and rivers. The line was turned over ahead of time. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 17 Oct 82 p 1] 11409

KIRGHIZIA-KAZAKHSTAN POWER LINE--Frunze--The 110-kV Dzhambul-Talas electric-power transmission line has been turned over for operation. It has been hooked up to the Unified System of the Central Asia-South Kazakhstan Power Ring. This will enable the responsive distribution of power within two republics and will help to develop the region's economy. Power-engineering is being developed dynamically in Kirghizia. Four powerful hydroelectric-power stations are operating on the Naryn River. The Naryn's energy will come to cities and villages of Kirghizia, Uzbekistan, Tajikistan and Kazakhstan over electric-power lines whose length has surpassed 50,000 km. [TASS] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 7 Jan 82 p 1] 11409

TURKMEN VIRGIN-LANDS POWER--The 42-km electric-power transmission line that has entered operation in Kizyl-Arvatskiy Rayon will help to greatly improve the power supply of Turkmenistan's virgin-lands farms. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 48, Nov 82 p 5] 11409

TURBOGENERATOR FOR NOVOSIBIRSK TETS--Assembly of the first turbogenerator for the Novosibirskaya TETs has been completed ahead of schedule at Kharkov's Elektrotyazh-mash Plant. The machine's capacity is 200,000 kW. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 48, Nov 82 p 5] 11409

BUILDING OF 1,150-KV LINE--Pavlodar--The first footings for the supports of the superpowerful 1,150-kV electric-power transmission line has been installed on the right bank of the Irtysh by the brigades of Vasiliy D'yachkov and Vladimir Senich from Pavlodar Mechanized Column No 59 of Tselinelektroset'stroy [Trust for the Construction of Electric-Power Grids in the Virgin Lands]. Already now they should have performed almost 1 million rubles' worth of work and reached Kazakhstan's borders with the Altay. Simultaneously, the Muscovite and Siberian mechanized columns have undertaken to lay the lines on the left bank of the Irtysh and in the Kulunda Steppe. The work pace has been stepped up. The targets for stretching the LEP-1150 [1,150-kV electric-power transmission line] from Ekibastuz to Barnaul and for transmitting power of Ekibastuzskaya GRES-1 to this power-short region in 1984 have been set. The 600-km Ekibastuz-Barnaul line will be only a portion of the new gigantic Ekibastuz-Bratsk power bridge, more than 1,150-km long, that will link up the two most huge power complexes of ETEK [Ekibastuz Fuel and Power Complex] and KATEK [Kansk-Achinsk Fuel and Power Complex]. On its journey, the line will pass over steppes and taiga, ascend mountain ranges and cross three of the largest rivers in these expanses--the Irtysh, the Ob and the Yenisey. Together with the westward laying of the Ekibastuz-Chelyabinsk LEP-1150, which was started earlier, the new line will form a power ring about 3,000 km in length. It will join the power systems of the Urals, Kazakhstan and Siberia into one whole, and, exploiting the 4-hour difference in time, pave the way for rationally manipulating powerful streams

of electricity and the capacities of thermal and hydraulic electric-power stations. [V. Stupak] [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 29 Oct 82 p 1] 11409

BUREYA POWER-LINE CROSSING--Blagoveshchensk, 6 Dec--The last and largest water barrier on the 1,000-km route of the Zeyskaya GES-Khabarovsk electric-power line, which is under construction, has been overcome. The crossing of the high-volume Bureya, which spreads its banks here to 1½ km, did not prove to be simple. In order to put a wire weighing several tens of tons across the river, the power-systems builders had to install giant shore supports of special design. They tower higher than a 20-story building. Krasnoyarsk Eletroset'stroy [Krasnoyarsk Trust for the Construction of Electric-Power Transmission Lines] and representatives of Khabarovsk enterprises coped excellently with this complicated installing operation. [Stringer Yu. Zhigaylov] [Text] [Moscow PRAVDA in Russian 7 Dec 82 p 1] 11409

ESTONIAN POWER-STATION OPERATION--Tallinn, 2 Jan--As usual, Tallinn's TETs-2 "Iru" operated with precision the first 2 days of 1982. The shift under Engineer N. Kruglov basically coped with the task of providing heat on New Year's Eve to the residents of the republic's capital. The power workers knew that the parties of many residents of the new microrayon of Tallinn--Lasnamyae--to see the old year off would coincide with housewarmings. As TETs Director E. Komp reported, unit machine operator P. Pukhm, senior duty electric installer V. Vanasel'ya, shift chief of the boiler and turbine department I. Khar'kov, and station-engineer shift chief A. Kir'yanov worked especially well during these two important days. The repair brigade, which made use of the break in the work of the power-engineering units, coped completely with the task. Brigade leader I. Nasedkin, mechanic E. Puusepp and welder A. Ogurtsov were on duty the first day of the new year. [D. Klen-skiy] [Text] [Moscow PRAVDA in Russian 3 Jan 83 p 1] 11409

KOMI-ARKHANGELSK-VOLOGDA POWER--Kotlas, Arkhangelsk Oblast--The Mikun-Kotlas LEP-220 [220-kV electric-power transmission line] has been placed under a load. This 200-km long power bridge was laid along the northern taiga, bogs and swamps. Starting it up enabled the power supply of kolkhozes and sovkhozes located at the border of the Komi ASSR and Arkhangelsk and Vologda Oblasts to be made more reliable. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 31 Dec 82 p 2] 11409

THIRD DNESTROVSKAYA POWER UNIT--Novodnistrovsk, Chernovitsy Oblast--The third unit at the Dnistrovskaya GES, which is still under construction, has been put under an industrial load. Its capacity is the same as its two predecessors--117,000 kW. It is distinguished from its colleagues only in that it was erected far more rapidly. The installers' brigade of M. Ostapenko speeded up startup of the unit by 2 months. This feat was achieved thanks to the competition under the Workers' Relay principle that was promoted among the hydraulic-engineering systems builders from Bukovina and by Kharkov's Elektrotyazhmas plant. The new construction project on the Dnestr has already given the country a stream of 300 million kWh of electricity. The collective has committed itself to starting up the fourth unit on the eve of the 60th anniversary of the forming of the USSR. [D. Tuz] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 17 Oct 82 p 1] 11409

EKIBASTUZ-SEVERNYY POWER STATION--Ekibastuz--Power workers and installers of Ekibastuzskaya GRES-1 came to the construction site yesterday by train--not by the usual bus. On the eve of the 60th anniversary of the USSR, the builders turned over for operation the Ekibastuz-Severnyy station and the 24-km section of the line that connects it with the city. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 18 Dec 82 p 1] 11409

SIXTH GRES POWER UNIT--The sixth power unit of GRES-1 is a facility that is due for startup this year. Sredazenergomontazh [Administration for the Installation of Power-Engineering Equipment in Central Asia] was a model of a high degree of organization during its erection. First among the cooperating workers, the heat-engineering equipment installers finished assembly of the boiler and auxiliary equipment and on 30 October were ready to undertake startup operations. A portion of the brigades came to the help of Sibenergomontazh [Administration for the Installation of Power-Engineering Equipment in Siberia], which was engaged in assembling the turbine. The first startup operation should be acid washing of the boiler. This would enable a work front to be opened for the electrical workers, the furnace-lining installers and other related workers. However, the acid washing was delayed through the fault of the station manager (the director is V. Mokshin). Recently, meetings of the startup staff have even occurred without the participation of representatives of the operators. The state of affairs at the electrical portion of the unit causes grave concern. Through the fault of Energostroymontazh [Power-Engineering Construction and Installing Administration] and the Construction Administration of GRES-1 (the chiefs are V. Kulikov and V. Khapko) the electrical premises still are not ready, and the electricians cannot begin to install equipment. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 49, Dec 82 p 19] 11409

KIRGHIZIA'S POWER GENERATION BOASTED--The republic's power workers carried out the annual plan for producing electricity ahead of time, on a national holiday--the 60th anniversary of the forming of the Union of SSR's. During the anniversary year it generated 11.02 billion kWh. The Naryn cascade produced 65-percent of this amount. Before the end of December another 155 billion kWh of electricity will be produced for the needs of the economies of Kirghizia and other Central Asian republics and Kazakhstan. [Text] [Frunze SOVETSKAYA KIRGIZIYA in Russian 31 Dec 82 p 1] 11409

PRIMORSKIY KRAY POWER GENERATION--Khabarovsk--The powerful Khekhtsir Substation put an operating load on the Primorskaya GRES-Khabarovsk LEP-220 (220-kV electric-power transmission line). It was constructed in the spurs of the Khekhtsir Mountain Range, not far from the center of the kray. It is planned to turn the Zeyskaya GES-Khabarovsk LEP-500 over on the threshold of the 60th anniversary of the forming of the USSR. Energy of the River Zeya, the Primorskaya GRES and electric-power stations of Khabarovsk and Komsomolsk-na-Amur will be able to speed up development of Primorskiy Kray's productive forces. [TASS] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 8 Nov 82 p 1] 11409

CHEBOKSARY'S 2-BILLIONTH KWH--Cheboksary--The meters of the Cheboksary GES--the concluding stage of the Volga cascade--yesterday recorded generation of the 2-billionth kWh since startup of the hydroelectric-power station. [Text] [Moscow SEL'-SKAYA ZHIZN' in Russian 5 Jan 83 p 1] 11409

FIRST SHAMKHOR TURBINE INSTALLATION--Shamkhor (Azerbaijan SSR)--Installation of the first turbine, of 190,000-kW capacity, has been completed in construction of the Shamkhorskaya GES, which is being built on the Kura. The Shamkhorskaya GES is the first station of the Middle Kura cascade, and creation of the hydraulic-engineering complex will help to irrigate more than 75,000 hectares of fertile land in the republic's west. [Text] [Moscow TRUD in Russian 26 Oct 82 p 1] 11409

SPANDARYANSKAYA GES IN CAUCASUS--Yerevan--Zangezur is a mountainous region in the Transcaucasus that stretches along the meridian in southernmost Armenia. The Vorotan River cuts it almost in half. Right now equipment of the Spandaryanskaya GES--the third station of the Vorotan cascade--is being installed here. The Spandaryanskaya GES is being erected at an altitude of more than 2,000 meters above sea level.

"When erection of the Spandaryanskaya GES is completed," Vorotan cascade director K. Arushanyan considers, "the run-off will get multiple-year regulation. In other words, not one drop of water of the spring runoff will be lost, and tales about its destructive force will recede into the background. The first two electric-power stations of the Vorotan cascade will yield each year about a billion kilo-watt-hours of electricity. The Spandaryanskaya GES will yield a substantial increment." Construction at high altitudes is not simple. And complexities here await not only those who erect the dam. The linesmen who lay high-voltage electric-power lines above the ravines will have just as many. [L. Kaybysheva] [Text]

[Moscow IZVESTIYA in Russian 29 Nov 82 p 4] 11409

ELEVENTH NIZHNEKAMSKAYA GES UNIT--Brezhnev (Tatarskaya ASSR), 1 Jan 83--The ordinary 11th power unit of the Nizhnekamskaya GES, the last stage of the Kama cascade, has been put under an industrial load. The capacity of this important power-engineering center on the Kama now exceeds 850,000 kW. The brigades of installers of the Spetsgidroenergomontazh [Specialized Administration for the Installation of Hydroelectric Power Equipment] Section G. Minnekhanov, V. Lapshin and P. Frolov, who successfully used here the progressive modular method of assembling the parts of the unit, distinguished themselves during the last stage of work on the facility. [R. Sabirov] [Text] [Moscow PRAVDA in Russian 2 Jan 83 p 1] 11409

FIFTH EKIBASTUZ GRES-1 UNIT--Pavlodar--The builders and operators of Ekibastuzskaya GRES-1 observed the 60th anniversary of the forming of the USSR by starting up the fifth power unit. The firstling of the second phase of the biggest thermal electric-power station in Kazakhstan, whose capacity is now 2½ million kW, has given industrial current. The experience that has been gained during construction of the first power machines will shorten the periods of installation of the next "500,000-er." A preliminary assembly of the structure was performed at a special assembly site: only the joining together of the multiton units on the footings remains to be done. This industrialization of the work cut by far the time for installing the components and assemblies. Right now the collective of the All-Union construction project is pushing the technological operations on the GRES's last three power units. Installation of the sixth unit was completed ahead of schedule, and production tests of its systems have started. Work is under way on the seventh "500,000-er" and the pace of assembling the eighth boiler and turbine is rising. Answering with deeds the decisions of the November 1982 CPSU Central Committee Plenum, which emphasized the importance of the accelerated development of the country's fuel-and-power complex, Ekibastuz GRES-1 builders will complete erection of the station next year. This will greatly improve the supply of electricity for Kazakhstan and RSFSR industrial regions. Simultaneously, erection of the next stations of the Ekibastuz "constellation" will be accelerated at the construction sites to which the released brigades of installers will transfer. [Kazakh SSR Telegraph Agency] [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 26 Dec 82 p 1] 11409

FAR EAST DAM DESIGNED--The Ministry of Power and Electrification has reviewed and approved the design for construction of the largest GES in the Far East--the Bureyskaya. It was developed by specialists of the Leningrad Department of Gidroproyekt [All-Union Survey, Design and Scientific-Research Institute] imeni S. Ya. Zhuk. It is planned to build the new and powerful "electricity factory" at the Talakan marker on the Bureya River in Amur Oblast. A dam 142 meters high will be built here. The station's hydroelectric-power units will generate more than 7 billion kWh of electricity each year. "The enormous importance of this huge GES, which is important for this region, consists not only in the receipt of cheap energy," notes deputy chief engineer of Lengidroproyekt [Leningrad Department of Gidroproyekt] V. M.

Boyarskiy. "It will also serve as a reliable shield against flooding, protecting nearby farm lands and communities from high waters and inundations caused by monsoons and strong cloudbursts." The future GES can to a great extent be considered the brainchild of Leningraders. Modern equipment for it is being sent by collectives of Elektrosila Association imeni S. M. Kirov, the Leningradskiy Metallichесkiy Zavod Association, and other enterprises of the city. [V. Alyushinskiy] [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 15 Dec 82 p 1] 11409

KAMA REGION POWER STATION--Perm--The Permskaya GRES, at the site of which equipment for the first power unit, with a capacity of 800,000 kW, has arrived from Leningrad's Electrosila Association, will become the power heart of the Kama region. The site of the new thermal electric-power station, which is to become the largest in Europe, will occupy several square kilometers. Each 3-4 months the list of the facilities turned over will be augmented--the concrete plant, the administrative building, a dock. Soon installing operations will begin on the main building, which is almost 100 meters high--where 6 power units with a total capacity of 4.8 million kW will be installed. The settlement of builders and power workers will grow simultaneously with the production facilities. More than 120,000 square meters of housing, kindergartens and stores have already been built at a meander of the Kama. [Text] [Moscow SEL'SKAYA ZHIZH' in Russian 20 Nov 82 p 1] 11409

FOURTEENTH SURGUT POWER UNIT--The 14th power unit of the Surgutskaya GRES has given industrial current ahead of schedule. Its capacity is 180,000 kW. Unlike previous units, it will produce heat in addition to electricity. [Text] [Moscow EKONOMICHE-SKAYA GAZETA in Russian No 43, Oct 82 p 3] 11409

NOVOSIBIRSK TURBOGENERATOR ASSEMBLED--Kharkov--Assembly of the first turbogenerator for the Novosibirskaya TETs has been completed ahead of schedule at the Elektrotyazhmash Plant by the brigade of Hero of Socialist Labor V. Kholodov. The machine's capacity is 200,000 kW. Next year the enterprise's collective will send two such units to Siberia, and their startup will enable the industrial center's power supply to be improved. [TASS] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 11 Nov 82 p 4] 11409

TURKMENIA'S POWER GENERATION UP--Turkmenglavenergo [Main Administration for Power and Electrification of the Turkmen SSR] workers have reported completion ahead of schedule of the program for generating electricity during the first 2 years of the five-year plan. The collective carried out the main clause of its socialist commitments, which were undertaken in honor of the 60th anniversary of the USSR. Since the start of the five-year plan the republic's electric-power stations have generated 14,651 million kWh of electricity. The Maryyskaya GRES imeni 50-Letiya SSSR--the industry's standard bearer--has made a major contribution to the overall success. The republic's largest station, which has been operating economically and without accidents for almost 10 years, is today producing 80 percent of all of Turkmenistan's electricity. For each kilowatt-hour produced here, 2½ grams of fuel below the norm are required. Since the start of the anniversary year, Mary power workers have generated 30 million kWh of electricity above the plan and is now supplying customers 19 million kWh daily, which is above the goal. Fulfillment of the plan for the first 2 years of the five-year plan was achieved ahead of time through growth of the republic's power-generating capacity. It is planned to increase Turkmenistan's generation of electric power 1.8-fold by the end of the five-year plan. [Turkmen Information Agency] [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 18 Nov 82 p 1] 11409

POWER-CONSTRUCTION ENGINEER FIRED--E. Filatov, manager of Ekibastuzenergostroy [Trust for the Construction of Power-Engineering Facilities at Ekibastuz], answers a report in issue No 24 of the weekly: The chief engineer of the general contracting administration, Energopromstroy [Administration for the Construction of Power-Industry Enterprises], has been relieved of his position because of unsatisfactory organization of construction and installing work for introduction of the third phase of the TETs. The number of workers at the facility has been increased to 283, which will enable the lag that has been permitted to be overcome. The trust's Resources Department is outfitting the facility completely with constructional structure. Centralized delivery of premixed concrete has been organized, eight lifting cranes are operating, and motor vehicles and mechanisms are being allocated strictly according to requisitions. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 49, Dec 82 p 19] 11409

SECOND MINGECHAUR POWER UNIT--Mingechaur--Information arrives each day at the headquarters of this large construction project about the readiness for startup of components and assemblies of the second power unit. Everyone has been waiting impatiently for the results of testing of the boiler and turbine. A couple of days ago Viktor Bykovchenko's brigade from Kavkazenergomontazh [Trust for the Installation of Power-Engineering Equipment in the Caucasus] completed the last operations on the turbine, and is readying it for turning over the shaft. It has carried out the complex of operations with high quality. The turbine of the second power unit has begun to operate at the idle. Simultaneously the operation of starting up the boiler has been carried out. It was a peak time for the builders of the stack's smoke-deflecting core. Brigades of Stavropol's Gidrosantekhmontazh [Trust for the Installation of Hydraulic and Sanitary Engineering Equipment] under Nikolay Osipovich, Vladimir Dedushev and Nikolay Suvorov completed this important operation. The brigades of Niyaz Gatamov and Shamamed Shamamedov of the Mingechaur Installing Administration of Kavkazenergomontazh prepared the boiler unit for the starting of the fire. By this time, installation of the gas conduits that are connected with the 335-meter stack had been completed. The experimental start of the boiler indicated that all of its components, and also the gas conduits, had been installed reliably, and the water-supply system, the modular pumping station and other units were operating faultlessly. The startup of the second power unit as a whole is approaching. [A. Mirzoyev, chief of the republic's Komsomol Construction Project for the Azerbaydzhanskaya GRES] [Text] [Baku VYSHKA in Russian 18 Nov 82 p 1] 11409

NUREKSKAYA GES ANNIVERSARY REPORT--Ten years have elapsed since the day the first unit of the Nurekskaya GES on the Vakhsh River started up. During this time more than 53.5 billion kWh of electricity have been generated. The hydroelectric-power station workers are greeting the 60th anniversary of the USSR with shock work. [PRAVDA-TASS] [Text] [Moscow PRAVDA in Russian 19 Nov 82 p 2] 11409

KOMSOMOLSK GAS-TURBINE STATION--In the city of Komsomolsk of Ivanovo Oblast, close to the GRES that was erected more than half a century ago in accordance with the GOELRO [State Commission for the Electrification of Russia] Plan, one of the country's first gas-turbine stations, with a capacity of 321,000 kW, is being erected. A brigade of specialists of the Smolensk Administration of Mosspetsatomenergomontazh [Moscow Trust for Special Installing Work at Nuclear Power Stations] began to erect the columns of the main building's framework. The installers' collective under A. Tkachev has committed itself to preparing a compartment for the first turbogenerator, with a capacity of 107,000 kW, by the 60th anniversary of the forming of the USSR. [PRAVDA-TASS] [Text] [Moscow PRAVDA in Russian 19 Nov 82 p 2] 11409

NIZHNEKAMSKAYA'S TENTH POWER UNIT--Naberzhnyye Chelny--The builders of the Nizhnekamskaya GES fulfilled their socialist commitments in honor of USSR Constitution Day ahead of time: the 10th power unit has been put into operation. It has given current to the Unified European Power System. Its electrical machinery was installed in less than 2 months, twice as rapidly as the preceding one's. The speed-up was achieved by introducing the progressive flow-line method. The specialized integrated brigades now work under a single job order. The carpenters and concreting workers who are erecting pits and shafts in the dam's body, into which parts of the electrical machinery are lowered, go on ahead. The installers follow, erecting the machine room. Brigades of Spetsgidroenergomontazh [Specialized Trust for the Installation of Hydroelectric-Power Engineering Equipment] complete the flow-line group. They do the consolidated assembly of power-unit components on a special stand, each brigade specializing in the installation and setting up of a definite component. The shock-work pace that was adopted in honor of the 60th anniversary of the forming of the USSR is building up. The hydraulic-engineering builders are confident that they will introduce another unit by the country's anniversary. Consolidated assembly has now started here. With the introduction of all 16 turbines, the design capacity of which will be 1,248,000 kW, the reliability of the electric power supply for Kama-region industrial enterprises will be greatly raised. [TASS] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 2 Oct 82 p 1] 11409

FIRST SHAMKHORSKAYA TURBINE INSTALLED--Shamkhor, 21 Oct--Installation of the first turbine, of 190,000 kW capacity, was completed yesterday, ahead of time, during construction of the Shamkhorskaya GES, which is being erected on the Kura. Connecting its components together and bringing it into working condition have started, and the water-wheel hydrogenerator is being installed. Introduction of the large-module method of installation and the breakdown of brigades into specialized teams have enabled the work pace to be increased and the quality of all operations to be improved. Next month is startup month at this hydroelectric-power construction project, the largest in Azerbaijan, the importance of the timely erection of which Comrade L. I. Brezhnev pointed out at recent ceremonies in Baku. The hydraulic-engineering facility builders' main efforts have been thrown into the sections of the first complex that are due for early startup. Concreting of the water conduit, a 3-story house in diameter, is being completed. The waters of the artificial Shamkhor Sea, the filling up of which is in full swing, will run along this steel arterial to the turbine and set it in motion. The laying of two LEP's [power transmission lines] of 110 kV each is approaching its end. They will connect the station with the Unified Electric-Power System of the Transcaucasus Republics. [Azerbaijan Information Agency] [Text] [Baku VYSHKA in Russian 22 Oct 82 p 1] 11409

NIZHNEKAMSKAYA'S ELEVENTH UNIT--Brezhnev (Tatarskaya ASSR), 27 Dec--Nizhnekamskaya GES meters have registered a new flow of electricity. The 11th power unit to be introduced into operation gave current today. The hydraulic-engineering facility builders carried out their socialist commitments in honor of the 60th anniversary of the USSR ahead of schedule. The electrical machinery was installed in 50 days, a week sooner than the preceding one. The speedup at this most important construction project of the five-year plan was achieved by introducing the progressive large-module method of installation. Before concreting had been finished in the pit, the Spetsgidroenergomontazh [Specialized Trust for the Installation of Hydroelectric Power-Engineering Equipment] collective undertook assembly of the electrical machinery on a special stand. The main component itself--the turbine--is being readied by G. Minnakhmetov's brigade. The collective that he supervises

has come out with an initiative: to do the job with fewer people. Manning has been reduced one-third by making effective use of machinery and increasing the personal responsibility of each component of the brigade. Other brigades are following their example. As a result, the section's collective of 150 people has been reduced to 110. The released installers have been sent to other construction projects. And the work pace has risen. Three units have been put into operation at the Nizhnekamskaya GES during the anniversary year. [TASS] [Text] [Moscow SOVET-SKAYA ROSSIYA in Russian 28 Dec 82 p 1] 11409

LATVIAN POWER-CONTROL CENTER--An original type of 6-story building has appeared in Riga, on Ulitsa Sverdlova. The state commission has accepted the first phase of the building where the technical and operational services of the Main Production Administration of Power Engineering and Electrification of the Latvian SSR will be quartered. In the Load-Distribution Control Center's room, facing the control desk, is a panel which lights up the entire wall. Operation of the cascade of GES's at Daugav and of the republic's thermal power stations and high-voltage power grids is recorded here. More detailed data in the form of text and columns of figures are shown on display screens that are installed in the offices of all the leading specialists. This enables them to be cognizant of the status of the entire power system and to take measures responsively for improving its operation. Analysis of the incoming information and monitoring of the power system's operation have been entrusted to computers. The Latvian Power workers are the country's first to work out and introduce a centralized system for the automatic regulation of power streams. "Its essence is the fact that electricity is distributed automatically within the republic and between Latvia and its neighboring republics, by computer," says Deputy Chief of the Load-Distribution Control Center N. S. Markushevich. "Depending upon the specific situation, the computers issue commands for the start-up or stopping of appropriate units or for increasing or decreasing their power, maintaining an operating regime that is optional and enables fuel and energy resources to be saved. Last year alone the system helped to save half a million rubles' worth of fuel. In sum, the computing equipment has been charged with carrying out more than 200 complicated tasks. Next year the computer pool will be augmented by two more computers." [Latvian Information Agency] [Text] [Riga SOVETSKAYA LATVIYA in Russian 12 Nov 82 p 4] 11409

ESTONIA'S SHALE-BURNING GRES--The Estonskaya GRES is distinguished among thermal power stations by the fact that it works on local shale. The fall-and-winter season, which is the most strenuous for our collective, has set in, when the consumption of electricity for lighting cities and villages increases above the usual load for each hour of decrease of daylight, and, with each degree of cooling, the requirement for heat for heating production and housing buildings increases by 3 percent. Nature itself, it seems, tests the power workers at this time. Planned preventive repair of power units is also employed to carry out measures that will increase the power of the equipment and the reliability and economy of its operation. For example, in the procedure for preparing for the forthcoming maximum load, the repair section under foreman Valeriy Kyllomets is replacing the manual apparatus on the boilers with mechanized equipment manufactured by the Il'marine plant. The GRES operators, with the participation of workers of the production enterprise Estonenergoremont, have already accomplished the intermediate level of repair on three units and have overhauled two power units. The three latest power units were repaired prior to the onset of cold weather. Along with the miners of the Estonslanets Association, we are right now doing everything possible to fill up available storage sites with fuel. The GRES will not experience a shale shortage--difficulties are associated only with unloading and storing it. The ordinary gates

to the GRES building have been replaced by sliding gates that are equipped with electric drive. In this way inrushes of cold air into the building are prevented. For this purpose, all the entrances have been equipped with thermal curtains. The Estonskaya GRES collective is completing preparations for irreproachable work under wintry conditions. [K. Senchugov, director of Estonskaya GRES] [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 43, Oct 82 p 4] 11409

KOSTROMSKAYA GRES FUEL CONSUMPTION--The Kostromskaya GRES brought fuel consumption for generating 1 kWh this year down to 310.4 grams, which is below the norm. As a result the station operated for almost a day on mazut that had been saved. Simultaneously, the specific consumption of electricity for in-house needs is being reduced. Remembering the sage folk saying, "Get the sleds ready in the summer, the carts in the winter," the power workers are now doing everything necessary for meeting the forthcoming cold weather with complete readiness. N. Baldin's brigade is setting an example in organizing the repair of fixtures and high-pressure pipelines. The brigade operates on an intense 24-hour schedule. It is one of the advanced brigades at the GRES. Foreman A. Bogachev's brigade, which is engaged in repairing underground cables, is meeting its competition commitments successfully. By the middle of August the required fuel reserve had already been accumulated at the GRES. Another mazut reservoir is being erected, in case of severe cold. Simultaneously, a careful check is being made over a broad front on the status of the heating grids and of production and housing premises. The teams of roofer A. Shirnov and carpenter A. Smirnov have the best indicators for these operations. [V. Vasil'yev] [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 43, Oct 82 p 4] 11409

PERM THERMAL POWER STATION--The Permskaya GRES, at whose construction site equipment for the first power unit, of 800,000-kW capacity, has arrived from Leningrad's Elektrosila Association, will be the power-engineering heart of the Kama region. The site of the new thermal power station, which will be the largest in Europe, will occupy several square kilometers. Six power units will be installed in the main building, which will be almost 100 meters high. Collectives of many enterprises are taking part in building the gigantic GRES. Their main task is to start up the first power unit in 1984. When the station comes up to its full capacity, 28 billion kWh of power will enter the country's electric-power grid from the Permskaya GRES. [PRAVDA-TASS] [Text] [Moscow PRAVDA in Russian 19 Nov 82 p 2] 11409

SECOND HYDROGENERATOR FOR SHAMKHOR--Novosibirsk--Manufacture of the second hydrogenerator for the Shamkhorskaya GES in Azerbaijan has begun at Novosibirsk's Sibelektrotyazhmash plant. This is the Siberians' concrete help to the hydraulic-power builders of the fraternal republic. Comrade L. I. Brezhnev spoke about the special importance of the timely erection of the Shamkhorskaya Hydroelectric Power Station at a ceremonial meeting in Baku. In response to this, the electrical-machinery makers intensified their schedule, putting fulfillment of the order under special monitoring. The electrical machinery, of 190,000 kW capacity, was designed to take into account the newest achievements of science: its weight was reduced and its reliability was raised. The rotor's design, which enabled it to be installed on the footing in sections, will help to cut the time for installing the hydrogenerators at the GES. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 2 Oct 82 p 1] 11409

CSO: 1822/118

PIPELINE CONSTRUCTION

MINISTRY REPLIES TO MATERIAL RESOURCE USE IN PIPELINE CONSTRUCTION

Moscow MATERIAL' NO-TEKHNICHESKOYE SNABZHENIYE in Russian No 11, 1982 pp 61-64

[Article: "Construction of Main Pipelines: Outlays and Results"]

[Text] The materials published under this heading (No 6, 1982) continue the discussion of the problems of the efficient use of material resources in construction of the main oil and gas pipelines. The discussion participants raised important questions, advanced specific suggestions to improve resource consumption. The editorial board received responses from the ministries and departments to this discussion.

Based on Real Needs

The Ministry of the Gas Industry has examined the articles of the journal. They have raised urgent problems whose solution will foster an improvement in material resource consumption.

For the purposes of more complete utilization of pipes in main gas pipeline construction, the ministry has obliged the customers by the 8 September 1981 order to set up working groups to determine the unused pipes that remain. Starting in 1982, the acts of the state commissions for inspection of the gas pipeline linear section reflect the condition of utilization of the pipes received for construction. The ministry administration of material and technical supply has been entrusted with taking into account the remaining pipes and using them to cover the needs for the next planned period.

The pipe needs for the gas industry facilities are computed on the basis of the construction plan draft, start-up of the production facilities, availability of planning documents, need for delivery and standards of the carry-over pipe reserves. They are then sent to the USSR Gosplan. The pipe funds are allocated directly by the Ministry of Construction of Oil and Gas Industry Enterprises and other contracting organizations who draw up the orders for pipe shipments by the requests of the construction organizations.

Taking into consideration that in the working plan, the pipe assortment often differs from the pipes indicated in the order specifications, the planning institutes have been instructed to be more careful in compiling the order specifications.

A. Kolotilin, deputy minister of the gas industry

Representatives of the Territorial Agencies to the Inspection Commission

The Ministry of the Oil Industry considers the questions raised by the journal to be unconditionally urgent problems which require mandatory solution. Suggestions were advanced in particular for confirmation of a single customer for building up Surgut. Considering the multisector make-up of the city-forming cadres and the numerous numbers of developers, the functions of single customer for planning and construction of housing, cultural-general facilities and communal services should be transferred to the Surgut gorispolkom.

We consider the suggestion that the representatives of the main territorial administrations of the USSR Gossnab be included in the state inspection commissions to be correct. This will help to avoid the unnecessary losses of pipes and other materials after construction of the facilities has been completed. The USSR Gosstroy can realize this suggestion after it has prepared a supplement to the document "Acceptance of Completed Facilities for Operation."

We consider it expedient for the successful erection of pipeline transport facilities of the Ministry of the Oil Industry and the Ministry of the Gas Industry for the West Siberian complex to set up in the Tyumen Oblast a specialized base of the USSR Gossnab for storage (as well as sorting) of pipe reserves of the assortment in highest demand in quantities which take into consideration the current and long-term (for 2-3 years) construction, as well as branches of this base which are located in the areas the closest to the long-term northern construction regions.

Organization of the base and its branches which are directly associated with the USSR Ministry of Ferrous Industry enterprises would exclude (or reduce) the shipment to the construction organizations of defective, unplanned for and surplus pipes, and would allow delivery of pipes on the optimal schedules, without losses and by the shortest routes.

Skilled sorting of pipes at the base and possible use of fine sanctions against the suppliers of defective products will foster an improvement in the quality of the manufactured pipes. There will also be a decreased probability of defective pipes reaching the routes, reduction in the additional outlays for elimination of numerous interruptions during testing and operation of the pipelines.

The institute "Giprovostokneft'" of the Ministry of the Oil Industry with the participation of "TsNIIproyektstal'konstruktsiya" for economical consumption of pipes has developed "Recommendations for Selecting Steel

Electric Arc Welded Pipes for Outside Field Pipelines." This document regulates the most customary pipe nomenclature, steel brands, strength class and optimal thickness of the steel pipe walls which are recommended for use in planning and in construction.

P. Alekseyev, member of the Ministry of the Oil Industry board

Surplus Reserves Are Reduced

The Ministry of Construction of Oil and Gas Industry Enterprises has set up a permanent commission for rapid monitoring of the use and storage of pipes. The ministry board has twice examined the preliminary results of the fulfillment of the approved measures in the organizations under its jurisdiction by monitoring the commission materials.

After analyzing the pipes remaining in the organizations under its jurisdiction with regard for the 1981-1982 construction program, and the availability of planned documents and production facilities of the construction organizations, the ministry suggested reducing the 1981 fund of large diameter pipes. Suggestions were made at the same time to transfer surplus pipes resulting from plan changes to other national economic sectors. These suggestions were adopted by the USSR Gosplan and the USSR Gossnab.

The 1982 work plan includes facilities for which over 300 kilometers of pipes were previously delivered. Completion of work to build 628 kilometers of reserve lines for the started-up pipelines, including the Ust'-Balyk-Kurgan-Ufa-Al'met'yevsk oil pipeline has also been stipulated.

In 1.5 years, 166 kilometers of pipes have been removed from the submerged zones, 158 kilometers have been gathered from the routes, 390 kilometers have been shipped from the stations to other facilities, 47 kilometers have been transferred to the customers, and 375 kilometers of pipes have been involved in construction of reserve lines.

A decision to build the gas pipeline systems in one corridor was made at the suggestion of the ministry. This will foster an improvement in the use of large diameter pipes. In addition, construction of 73 percent of the route can be done under these conditions year round. Only 44 percent of the route could be worked year round at the previously constructed pipelines. Cost accounting production lines have now been set up. Single work limits for the entire five-year plan are set for them. These lines are equipped with special powerful equipment.

In order to accelerate delivery and to improve pipe preservation during transporting, pipe shipment by the northern sea route to the north Tyumen Oblast has been set up.

A number of other measures are being taken which are aimed at improving the use of pipes. The document "Additional Measures for Ensuring the Material Interest of Construction-Installation Organization Workers in Economical Consumption of Pipes, Materials, and Their Timely Removal from Completed Construction Facilities" has been prepared jointly with the sector trade union

central committee. The corrected "Instructions for Technology and Organization of Shipment, Loading, Unloading and Storage of Large Diameter Pipes in Oil and Gas Pipeline Construction" have been approved. The program for training and improving the skill of worker cadres includes a section on a prudent attitude towards pipes and their economical use.

At the same time, some questions remain unresolved. The ministry as before has included into the construction plan pipelines which had not been provided with planned-estimate documents by 1 July. This will lead to additional shipments and the formation of surplus pipe reserves at individual construction sections.

Construction of the railroad to Urengoy is lagging. This will significantly delay shipment of pipes.

A considerable number of pipes are arriving for gas pipeline construction with plant insulation coating. The Ministry of the Maritime Fleet and the Ministry of Railroads , however, have not taken the proper measures to preserve the insulated pipes during transporting. Some batches of pipes thus are damaged. This impairs the work of the builders.

Yu. Andreychev, member of the Ministry of Construction of Oil and Gas Industry Enterprises board

Boundaries and Composition of the Oil and Gas Complex Are Defined

The article "Efficient Use of Material Resources" correctly notes that the work of the interdepartmental territorial commission on questions of developing the West Siberian oil and gas complex is complicated by the fact that which enterprises and organizations should be included in this complex has not been defined sufficiently clearly and accurately.

The creation of the interdepartmental commission in the USSR Gosplan is the beginning of a major experiment to set up a system for controlling the territorial-production complex. Whereas the different standard acts have formulated the main components of the economic mechanism for the enterprises, sectors and country as a whole, these acts have only been created for the territorial-production complexes. One of them is the decree of the USSR Gosplan of 9 July 1982 which approves the method instructions for the order of planning the development of the West Siberian oil and gas complex. This document defines the boundaries and composition of the complex, its main tasks, order and list of indicators to be used in developing the five-year and annual plan drafts for economic and social development of the USSR.

According to the method instructions, the list of enterprises, organizations and institutions which are included in the West Siberian oil and gas complex is determined by the ministries and departments of the USSR and the union republics, whose enterprises are doing work associated with the development of the West Siberian oil and gas complex. These lists will simultaneously be presented with the plan drafts.

The article notes that the complex was in a state of disorder and not integrated because it did not include the transportation organizations, construction industry enterprises and power engineering services.

The enterprises and organizations of the Ministry of Railroads, the RSFSR Ministry of the River Fleet, Ministry of Civil Aviation, USSR Ministry of Communications, USSR Gosnab, USSR State Committee for the Supply of Petroleum Products and other service sectors of the complex which are located in the Tyumen, Tomsk and Novosibirsk Oblasts and which provide the corresponding services to the enterprises and organizations of the profiling sectors in fact are not included in the complex. However, as stipulated by the method instructions, they plan their activity in this part by a separate construction project, the West Siberian oil and gas complex, give to the USSR Gosplan planning indicators which are associated with rendering services, and report on the results of all their activity according to the active accountability forms of the USSR Central Statistical Administration.

The interdepartmental commission has been entrusted with developing long-term programs, five-year and annual plans for development of the West Siberian oil and gas complex, monitoring their realization, as well as preparation of suggestions for proportional development of the sectors included in this complex. This work is done with the participation of the appropriate territorial organizations of the ministries and departments and scientific research institutes.

The mechanism for the influence of the interdepartmental commission, like the USSR Gosplan, in the implementation of regional tasks is the plan. The preparation of substantiated and coordinated planning solutions, timely elimination by a balanced plan of the developing disproportions and monitoring the plan fulfillment are control levers which the commission must use to unite the efforts of many organizations who are participating in the complex's development.

V. Filanovskiy, head of the USSR Gosplan section

High Quality for the Plans

The article notes that the reason for poor management is hidden in the miscalculations of planning and supply, in the poor responsibility for preservation of materials, and in the shipment to the organizations of the Ministry of Construction of Oil and Gas Industry Enterprises of pipes of unnecessary assortment. This statement is correct. The planning miscalculations are that at the suggestion of the customer ministries, the USSR Gosplan during the year excludes individual facilities from the plan, and includes others instead. This entails a change in the demand for pipes and results in the lack of use of previously delivered pipes.

The USSR Gosplan, USSR Gosnab and USSR Ministry of Ferrous Metallurgy approve the production plan for welded large diameter gas pipeline pipes by dimensions and thicknesses of the walls based on the data of the customer ministries in quantities defined by the planning institutes of the

Ministry of the Oil Industry and the Ministry of the Gas Industry by direct (physical) accounting. The Main Administration of Pipe Supply and Marketing of the USSR Gossnab issues orders for pipe shipment to the organizations of the Ministry of Construction of Oil and Gas Industry Enterprises strictly according to the specifications made by these ministries with indication of the destination points and the recipients. These drafts often include changes which are associated with a reduction in the length of the route and crossings. This results in the formation of pipe surpluses.

The article truthfully states that the organizations of the Ministry of Construction of Oil and Gas Industry Enterprises because of the late reception of planning-estimate documents have been forced to present the pipe orders before these documents have been received, and naturally they allow miscalculations. It is the opinion of the USSR Gossnab that there is a need for a significant improvement in the quality of the plans and a change in the schedules for presenting the planning-technical documents.

For this purpose one should examine the question of departmental subordination of the planning institutes. They are currently subordinate to the Ministry of the Gas Industry and the Ministry of the Oil Industry, the customer ministries. The Ministry of Construction of Oil and Gas Industry Enterprises as the general contractor for construction of pipelines does not have any influence on the work of these institutes.

The Ministry of Construction of Oil and Gas Industry Enterprises has repeatedly raised the question of transferring to its jurisdiction the institutes which are planning the main pipelines designed to transport gas and oil. This would permit more rapid and qualified solution to questions of improving planning and their pinpointing during the course of construction.

In our opinion, this question deserves the most serious attention. Its solution will permit elimination of the shortcomings in the use of pipes to build main pipelines which develop because of the untimely development of plans and numerous changes.

Suggestions regarding the need to develop warehouses in the region, improvement in the shipment system, increased responsibility for efficient and economical use of material resources in the construction of oil and gas pipelines in all links of the construction organizations are quite correctly advanced. It is very important to coordinate the actions of the customers and the contractors, designers and planners and other participants in the construction, and to set up economic conditions under which the builders would bear material responsibility for pipes ruined because of them. Responsibility of the transportation organizations for the preservation of pipes during transporting and unloading should also be improved.

In our opinion, the Ministry of Construction of Oil and Gas Industry Enterprises jointly with the interested ministries and departments should develop and implement a set of measures on all the listed questions. The head of the Tyumen main territorial administration of the USSR Gossnab, V. V. Zaychenko, has been instructed to participate in developing these measures.

L. Spivakovskiy, acting head of the USSR Gossnab Administration of Ferrous Metals

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PIPELINE CONSTRUCTION

PIPELINE CONSTRUCTION PROGRESS REPORTED

Pipeline Workers Overcome Mountain Obstacles

Moscow STROITEL'NAYA GAZETA in Russian 20 Oct 82 p 1

[Article by R. Yevseyeva, correspondent of the Ministry of Construction of Oil and Gas Industry Enterprises press center: "Urengoy Gas to the Transcaucasus"]

[Text] Tests of the new main gas pipeline system Novopskov-Aksay-Mozdok and Mozdok-Kazi-Magomed have been completed. The Siberian gas which has already come to Novopskov will now pass through the northern Osetiya and Checheno-Ingushetiya, through Daghestan and Azerbaijan, and at the final point of the new underground line, the Kazi-Magomed compressor station, will be connected to the Transcaucasus system of main gas pipelines.

I remember this spring in the small Azerbaijan settlement of Khachmas where the helicopter of the builders landed for fueling, the airport head came out of his glass tower to meet the well known people:

"Greetings builders," he called, "will the gas arrive soon?"

He waved his hand at the filling attendant: fill it faster, they are in a hurry!

Then our helicopter flew along the gas pipeline over mountains whose verdure was not yet burnt by the summer heat.

"A long spring, rains, fog in the mountains held the builders back for a long time on this section," the deputy head of the association Soyuzintergazstroy B. Blekhman related, "did not allow us to even ship pipes to the route."

He did not know yet that heavy showers with hail would descend on the builders in the summer and erode the trenches, while the mud flows would turn the half-dry mountain rivers into churning streams impassable for equipment.

It is not easy to build the route in the mountains where the height at times reaches 1.5 kilometers. The normal daily rate is a kilometer of pipeline

per day which is customary for the builders on the Siberian and European plains, did not exceed 200-300 meters here. But to the north, where the ravines of the main Caucasus ridge only begin, it was difficult for the builders. For example, on the 80-kilometer section, the SMU-5 of Krasnodartruboprovodstroy found 25 kilometers of plains, the rest was "complicated slanting mountain sections" which the "ledges", that is the level places, occupied slightly more than 3 kilometers.

The floodplain of the Kalichi River was seen as a grey strip from the altitude at which the welding-installation brigade of Sh. Zhachimuk from the trust Krasnodartruboprovodstroy was working. The bulldozer which was creeping downwards like a small bug could only be seen by going up to the very edge of the steep incline. It held on a steel cable a length of the gas pipeline which was lowered along the incline. The welders worked here by the standard method worked out for these steep slopes, they joined the pipe from the top. The next pipe was welded onto the common length at the top, on the platform, and then the bulldozer carefully pulls this entire bulky thing downwards, freeing up a place for a new pipe. The insulation-laying column can no longer pass on these slopes. The insulation work is done manually. Do you know what it means to clean and wind even a meter of pipe 1220 mm in diameter with insulation tape?!

Now this pipe, rolled by the hands of the insulators from the brigade of V. Perepelkona has already taken its working place for long years. Not far away the silver frameworks of the compressor station "Izberbash" rise. Its turbines roughly in the middle of the long route from Mozdok to the south will provide a new impulse for the Siberian gas.

"The builders of the compressor stations should be given their due," says I. Ivan'ko, the deputy head of the Glavyuzhtruboprovodstroy and the head of the construction headquarters for the northern arm of the route. "They have greatly accelerated construction by using their own metal foundations under the facilities instead of the reinforced concrete poured and precast foundations."

You will not see a single of these foundations at any compressor station. The builders of the second section of the mobile mechanized column of the trust Krasnodartruboprovodstroy used poor quality spiral-seam pipes to weld rigid cubic structures and installed them on the standard flat foundation. Then the installers placed block-boxes on these "cubes," faced them with panels, and the shop was ready. This idea was born in the trust. A. Kabanov, the deputy manager of the trust is named the main developer by the builders with gratitude. The use of the new foundations which greatly accelerated the construction schedules permitted the compressor station to be prepared for start-up in time.

Now the tense days of construction of the Novopskov-Aksay-Mozdok and Mozdok-Kazi-Magomed gas pipelines are behind. Only the narrow band of land which has not yet been overgrown with grass and is clearly visible from above recall them. The steel gas trunkline lies underneath it.

Construction Progress Figures

Moscow STROITEL'NAYA GAZETA in Russian 20 Oct 82 p 1

[Text] The summary of the course of work indicates that there has been no great increase in the volume of work on the route in the last 2 weeks. The rainy autumn which does not allow the builders to work in full force has had its effect. At the same time, individual collectives where the labor organization is high are achieving excellent results even under these difficult conditions. Thus, the integrated production line headed by the young leader Leonid Mikhel'son (trust Kubyshevtruboprovodstroy) laid 9 kilometers of gas pipeline in a week. The collectives of I. Shaykhutdinov, V. Belyayeva, B. Diduk and a number of others are also working well. This proves that even in bad weather one can work rapidly and with good quality. One only needs the desire to apply skill and effort. Some collectives do not have enough of precisely these qualities, in particular, the Glavvostoktruboprovodstroy who only has nine lines working on the export route instead of 15. The participants in the construction of the transcontinental gas trunkline have adopted high commitments for early completion of the linear section of the export gas pipeline. The majority of them are keeping their word with honor. But in order to fulfill the commitments in time and fully, there should not be any laggards on the route.

Construction of the Urengoy-Pomary-Uzhgorod Gas Pipeline. Course of Work on 19 October 1982 (in km)

Subdivisions	Assignments to the end of the construction	Welded into a length	Laid in the trench
Glavsibtruboprovodstroy	854	41	17
Glavvostoktruboprovodstroy	1403	280	190
Glavtruboprovodstroy	1111	600	500
Glavyuzhtruboprovodstroy	339	130	73
Glavukrneftegazstroy	398	92	35
Soyuzintergazstroy	354	78	70
Total	4459	2221	885

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PIPELINE CONSTRUCTION

ASSEMBLED PIPELINE WORKERS ANALYZE RESULTS, AIR COMPLAINTS

Moscow SOVETSKAYA ROSSIYA in Russian 22 Jan 83 p 1

[Article by M. Zaripov, in-house correspondent: "Confident Step of the Trunkline"]

[Text] The builders of the Urengoy-Pomary-Uzhgorod gas pipeline assembled yesterday in Kazan.

They are working on different segments of the route, from cold spaces of the northern Ob region to the Carpathians. For example, the leader of the line A. Rekoshetov lays pipes through the Pripyar'ye swamps. The production line of I. Gubitskiy is working near the legendary Prokhorovka where the battles of the Kursk arc rumbled. Hero of Socialist Labor I. Shaykhutdinov from "Tatnefteprovodstroy" is working the route between Vyatka and Kama.

Over 50 collectives of the production lines, hundreds of brigades are rapidly advancing towards each other over the entire length of the unique gas pipeline. The rate of the construction work is accelerating. At the previous Urengoy-Novopskov route, one production line advanced 10.4 kilometers in a month. The subdivisions at the intercontinental Urengoy-Pomary-Uzhgorod trunkline are advancing 1.5-fold faster, 15.4 kilometers! Not all the sections have welded the "red joints" yet, but the gaps between the stages are getting shorter.

The builders not only summarized, but also analyzed the experience at the assembly. The relay race participants advised on how to work more harmoniously and productively.

"Frosts, slush, intense heat and rain do not help of course. However the worst is lack of agreement, in particular, difficulties in shipping pipes, equipment and materials. We will solve this problem and add to the advance of the trunkline."

These are correct claims. The collectives of 28 ministries and departments are involved on the route and at the plants, moorings and railroad stations on which the intensive work of the builders depends. It is impossible to justify the subdivisions of "Vostoktruboprovodstroy" who are slow to master

the experience of the integrated production lines. The customer, the Ministry of the Gas Industry, does not provide shipment of parts, assemblies and materials for the compressor stations sufficiently rapidly. The builders of the Siberian branch of the route make claims against the sector headquarters for not yet receiving light-weight equipment to cross obstacles. The Siberian river workers who did not deliver the pipes to the route in the summer seriously let down the route workers.

The relay race participants stressed in their appeal at the assembly to all the trunkline subdivisions that it is now necessary to actuate the line section of the route, build and complete almost half of the compressor stations, 17 pumping facilities, and to lay two lines of the underwater crossings by the time the gas pipeline starts up.

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PIPELINE CONSTRUCTION

KHARTSYZSK DEVELOPS NEW ANTICORROSION PIPE COATING

Moscow IZVESTIYA in Russian 7 Jan 83 p 1

[Article by N. Lisovenko, in-house IZVESTIYA correspondent: "For Gas Trunk-lines"]

[Text] Ferrous metals have their enemies like everything else that exists. Rust, or corrosion is the most unmerciful one.

Insulation helps to slow down the deterioration process of iron items. The special shop of anticorrosion coatings built at the Khartsyzsk pipe plant will serve this purpose for large diameter steel oil and gas pipelines.

Construction of one of the world's largest anticorrosion coating shops has been started in Khartsyzsk next to the pipe electric arc welding shop. The deputy minister of the Ukrainian SSR Ministry of Installation and Special Construction Work, N. Amelichkin, says:

"The ministry has always considered the especial importance of the facility. This is why its degree of readiness is so high."

Among the 4,500 T of technological equipment installed in the last 6 months, a considerable part has been manufactured in the FRG. It was supplied to Khartsyzsk on time, in complete correspondence with the concluded contract. The West German firm "Mannesman," despite the appeal of the administration of American President Reagan to stop cooperating with the USSR in the largest "Gas-Pipes" deal proved that it could be a reliable trading partner.

The technology of applying an anticorrosion coating to the pipes in the new shop was adopted by the "Mannesman" plant. We note that it is being used in such broad scales for the first time, and although the responsibility in this case is very great and the schedules are the reduced to the maximum, nevertheless, the Soviet builders and the chief installers from the FRG are confident that everything will turn out well.

In the new production today which occupies a total of 30 hectares, one can see the entire path of the steel pipe in its advance towards increase in service life. It enters on powerful rollers a unit where the scale is removed from it. Then it enters a special chamber in which the pipe is

degreased. It is then dried and heated to a temperature of 200°. Ten layers of polyethylene tape are then applied to the metal surface. The pipe further passes to the last unit where it is treated with a special resin, not on the outside, but from the inside.

"All of us , " said the brigade foreman of the Kommunarsk installers from the trust "Donbassmetallurgmontazh" V. Yashchevskiy, "are hurrying to complete all the work faster."

Almost a thousand people will be working at the anticorrosion coating complex. They will be able to produce 760,000 T of insulated steel pipes which is sufficient to lay 1,500 kilometers of main gas pipeline whose guaranteed service life will be over 30 years.

"Where will the first batch of the new product go to?" we asked the director of the Khartsyzsk pipe plant B. Kondratov.

"To the Urengoy-Pomary-Uzhgorod gas pipeline -- of course," he replied. It is only important to remember that the pipes which have been insulated by the new method will also serve longer and because of the inner treatment of the metal surface they will permit a decrease in resistance to gas streams, and consequently, also increase the gas pipeline productivity by 2-7 percent."

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PIPELINE CONSTRUCTION

MATHEMATICAL MODELING IMPROVES PIPELINE EFFICIENCY

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 20 Jan 83 p 3

[Article by G. Dil'dyayev, in-house KAZAKHSTANSKAYA PRAVDA correspondent:
"Oil Pipeline and Mathematics"]

[Text] Cooperation of the production engineers of Mangyshlak and the scientists of the Kazakh State University imeni S. M. Kirov is bearing good results in the struggle to improve production efficiency.

A short hop and the construction areas of the Shevchenko outskirts glistened under the airplane's wing. The An-2 turned to the customary course: the flight plan was to examine the 700-kilometer route of the Uzen'-Guryev oil pipeline. The oil trunkline which disappears over the horizon is clearly visible from above. The pipe is banked up and a dirt road stretches along it. There is a power transmission line and cathode protection stations in even intervals. Small oases appear in the rocky desert steppe like small stations and sidings: two-three saplings around a small house, technological unit, silver tank. The oil warming furnaces are located here. They operate even in the hot summer, otherwise the capricious Mangyshlak oil will get cold and block the pipe with a paraffin plug.

We attentively look downwards while flying along the steel oil river for an hour, another, three. The pattern is customary and its monotony puts one to sleep, but the eye is ever searching for a dark oily spot leaking from the pipe, the sign of an accident. They occur rarely, but the flight over the oil trunkline is made regularly. Our flight ends in 5 hours and we report to the main dispatcher of the "Yuzhnefteprovod" administration: everything is in order.

During the years that the Mangyshlak field has been in operation, over 220 million T of oil have been extracted on the peninsula. Over 70 percent has been sent for refining to the center of the country by pipeline. The unique "hot" oil pipeline Uzen-Guryev-Kuibishev has been in operation since 1969. The collective of the "Yuzhnefteprovod" administration is successfully coping with the plans for pumping fuel and has gained experience in operating the new equipment. Many organizational, technical and scientific problems have been resolved here.

The main pipeline today is the most complicated, highly mechanized and automated hydraulic system, wide-branching and extended. It is equipped with powerful pumping stations and an infinite number of shut-off and regulating fittings, lines and structures of technological communication, remote control and automatics, electrical and chemical protection, fire-fighting devices and warming furnaces. The oil pumping process is continuous and requires large expenditures of fuel and energy resources.

How can the work of all the components of this system be coordinated so as to pump more oil? This requires consideration for an infinite set of conditions and highly productive work of the "pipe." This problem can only be solved by computer. The oil transporters long ago adopted computers as their assistants, set up an information computer center and are introducing an automated production control system. Together with the scientists of the Kazakh State University, the specialists of "Yuzhnefteprovod" have been involved in perfecting the technological pumping of highly viscous oils and optimization of these processes based on mathematical modeling.

The mathematical model of the optimal thermal and hydraulic operating regime of the oil pipeline is a system of controls whose solution algorithm is presented in the form of a set of programs compiled in the "language" FORTRAN-4 for the YeS-1022 computer. Analyzing the stream of operating information coming from the dispatcher stations, the machine selects the most advantageous technological regimes in which the minimum necessary quantity of fuel and energy is expended. The "computer-pipe" system permits both current and long-term planning of the oil pipeline operation.

"We started small," says the deputy head of "Yuzhnefteprovod" for the automated control system, V. I. Martynov. "Laboratory optimization of the production processes was organized in 1973 upon the initiative of the main production engineer N. A. Perkin. Our goal was very 'modest': introduce economic-mathematical methods into the practical operation of the oil pipeline and switch the technological and managerial functions to the shoulders of the computer equipment."

Then, 10 years ago, they had nothing more than enthusiasm. The laboratory staff consisted of three mathematicians, graduates of Moscow State University, headed by a very young specialist Vladimir Martynov. The speed of electronic counting reduced distances to nothing. Many failures had to be endured.

Experience was gained year after year and authority was acquired. The administration soon bought the most complicated equipment with all the periphery, as the mathematicians say. The equipment permitted remote turning on and off of the pumps and closure of the valves on the linear section of the pipeline. Then all the prerequisites were present for the creation of a mathematical model for the oil pumping processes in order to transfer the main dispatcher functions to the computer.

At that time, the opponents or the "sober-minded people" as they called themselves, continued to compute the technological regimes using logarithmic rulers. N. Perkin, V. Martynov and the former chief engineer of the administration Z. Abdurakhmanov (today he is in party work) struggled over the

set task long evenings. The task was from the field of thermohydrodynamics. It became clear that they could not cope with it.

Lucky chance brought the enthusiasts from "Yuzhnefteprovod" together with the Kazakh State University professor, the famous specialist in the field of hydrodynamics A. T. Luk'yanov, colleagues from the department of applied mathematics of the university V. S. Neronov and L. A. Nesterenko. The problem was solved by united efforts. The production processes were brought close to the optimal by mathematical modeling.

What did the innovation do? It reduced fuel consumption for warming the oil and the pumping units "eat up" less electricity. Considerably less gas and electricity was expended. Further, there was an improvement in the reliable operation of the oil pipeline. Now the airplanes inspect it only once a week, while previously they "hovered" over the "pipe" from day to day. The periods for elimination of accidents were reduced. Of course, it was as if the throughput of the pipeline had increased. All of this together yielded an economic effect of hundreds of thousands of rubles.

Optimizing the work of numerous cathode stations which guard the oil pipeline from corrosion is in the near future. Annual major repair of 20 kilometers of pipeline has been stipulated. Which section should be selected so that repairs are made precisely where they are needed? The computer answers this question.

The set of programs for optimizing the production processes of pumping oil based on mathematical modeling has been introduced since 1978. The results of cooperation between scientists and production engineers have great theoretical and practical importance. They make a significant contribution to the improved operation of the oil pipelines and they can be used at other oil trunklines.

The November (1982) Plenum of the CPSU Central Committee indicated the need to direct the development of science and technology to an even greater degree towards solving the most important national economic problems. The joint work of the oil transportation workers of Mangyshlak and the mathematicians of the Kazakh State University is an example of the skillful summing of efforts aimed at improving production efficiency, economy and efficient use of fuel and energy resources.

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PIPELINE CONSTRUCTION

BRIEFS

KURSK PIPE WELDING--A hundred kilometers of large diameter pipes have been welded on the Kursk segment of the Urengoy-Pomary-Uzhgorod gas pipeline. Almost half of all the seams which connect the lengths into a solid pipeline at the sites of its laying in the trench have been made with the help of the "Styk-1" welding complexes. The enterprises of the Ministry of the Electrical Engineering Industry supply this equipment. The brigade of welders of V. Leont'yev from the trust Krasnodartruboprovodstroy was one of the first on the route to master the new equipment. The use of the complex doubled the time for making each butt joint. "It is always difficult to master new equipment, nevertheless our welders were tops," says V. Leont'yev. "They studied the design of the complex every free minute and pored over the drawings." The results are impressive: the brigade of Leont'yev welded a thousand butt joints. [Text] Moscow STROITEL'NAYA GAZETA in Russian 20 Oct 82 p 1] 9035

SWAMP CROSSING--Tyumen Oblast--The northern route workers, having started laying their section of the export gas pipeline Urengoy-Pomary-Uzhgorod, have successfully overcome the next insidious obstacle, a half kilometer swamp. Without waiting for the frosts, the collective of the ninth excavating administration of Priob'truboprovodstroy and the drivers of the garage from the new trust Kazymtruboprovodstroy laid a reliable road across the swamp in a short time. The heavy equipment of the installation column travelled on it. [Article by A. Zhdanov] [Text] [Moscow STROITEL'NAYA GAZETA in Russian 20 Oct 82 p 1] 9035

PIPELINE SUPPORTS--Rovno--The Dubno plant has set up production of reinforced concrete supports for holding the pipelines on swampy and superwet sections. The first batch of products was sent ahead of schedule to the builders of the Urengoy-Uzhgorod gas pipeline. [Article by G. Dolzhenko] [Text] [Moscow STROITEL'NAYA GAZETA in Russian 20 Oct 82 p 1] 9035

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